Dual Credit: Math 110/Math 120

Date_____ Period____

Evaluate each using the values given.

1) $y^2 + x + y^2$; use $x = 7$, and $y = 6$

A) 87 B) 70
C) 79 D) 89

Simplify each expression.

2) $5(1 - 6x) - 5x(1 - x)$

A) $-46x - 6 + 8x^2$
B) $5 - 35x + 5x^2$
C) $5 - 34x + 5x^2$
D) $-20x^2 - 19x$

Solve each equation.

3) $-(3k + 3) = 6(k + 3) + 6$

A) $\{-3\}$ B) $\{-14\}$
C) $\{20\}$ D) No solution.

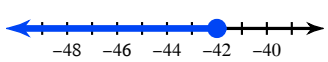
4) $|-6n + 8| + 3 = 49$

A) $\left\{-\frac{19}{3}, 9\right\}$ B) $\left\{\frac{5}{3}\right\}$
C) No solution. D) $\left\{-\frac{7}{4}\right\}$

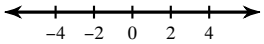
Solve each inequality and graph its solution.

5) $-8 - 6(n + 8) > -6(n + 2)$

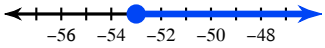
A) $n \leq -42$:



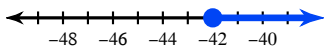
B) No solution. :



C) $n \geq -53$:



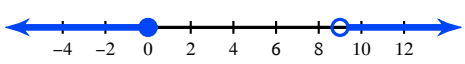
D) $n \geq -42$:



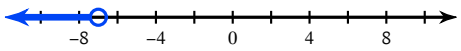
Solve each compound inequality and graph its solution.

6) $6k - 10 \geq 10 + k$ or $3 + 8k < 5k - 9$

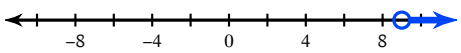
A) $k \leq 0$ or $k > 9$:



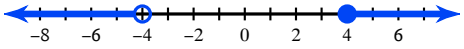
B) $k < -7$:



C) $k > 9$:



D) $k \geq 4$ or $k < -4$:



Write the standard form of the equation of the line described.

7) through: $(2, -3)$, perp. to $y = -2x - 4$

A) $x + 2y = -8$ B) $x - y = 0$

C) $x - 2y = 8$ D) $2x - 5y = 10$

Write the slope-intercept form of the equation of the line described.

8) through: $(-4, -2)$, parallel to $y = -\frac{1}{3}x + 4$

A) $y = -\frac{1}{3}x + \frac{10}{3}$ B) $y = \frac{10}{3}x - \frac{1}{3}$

C) $y = -\frac{10}{3}x - \frac{1}{3}$ D) $y = -\frac{1}{3}x - \frac{10}{3}$

Write the slope-intercept form of the equation of the line through the given points.

9) through: $(2, -1)$ and $(-3, -2)$

A) $y = -\frac{7}{5}x - \frac{1}{5}$

B) $y = -\frac{1}{5}x - \frac{7}{5}$

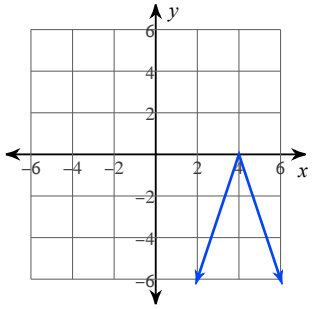
C) $y = \frac{1}{5}x - \frac{7}{5}$

D) $y = -\frac{4}{5}x - \frac{7}{5}$

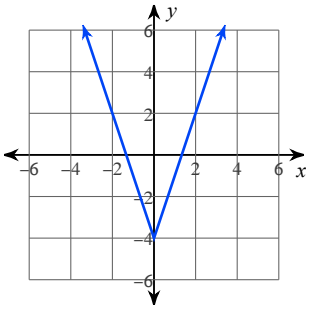
Graph each equation.

10) $y = -3\left|x - 4\right|$

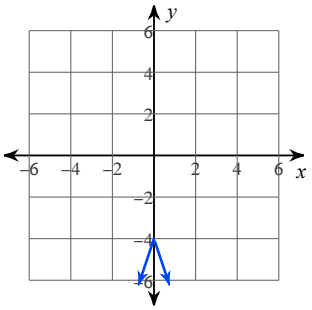
A)



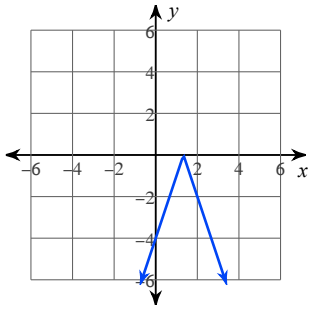
B)



C)



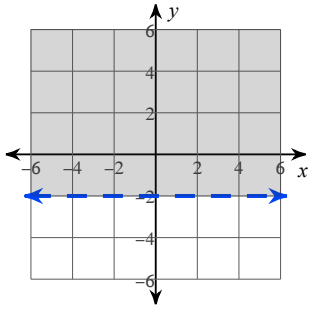
D)



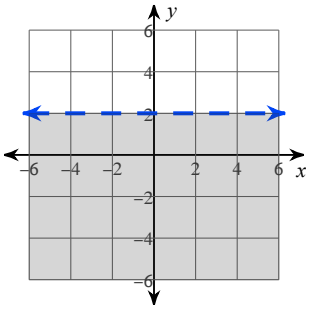
Sketch the graph of each linear inequality.

11) $y > 2$

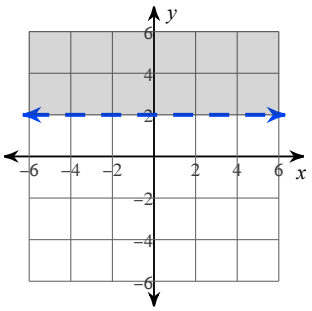
A)



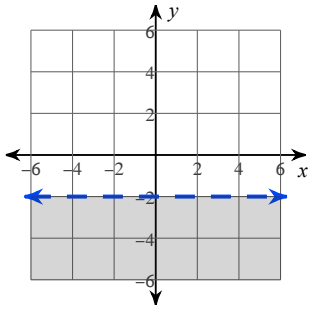
B)



C)



D)



Solve each system by elimination.

12) $11x - 4y = -12$
$-22x + 9y = 27$

A) $(0, 3)$ B) No solution
C) $(3, 0)$ D) $(-3, 0)$

Solve each system by substitution.

13) $5x - 7y = 19$
$8x + y = 6$

A) $(1, -4)$ B) $(1, -2)$
C) $(-1, -7)$ D) $(1, -6)$

Simplify.

14) $(3 + 4i) - 8 - (-1 + i)$

A) $-6 - 3i$ B) $-6 + 5i$
C) $-4 + 3i$ D) $6 + 3i$

15) $\dfrac{-4 - 2i}{6 + 2i}$

A) $\dfrac{-17 - i}{20}$ B) $\dfrac{-7 - 2i}{11}$
C) $\dfrac{-7 - i}{10}$ D) $\dfrac{-1 - i}{10}$

Factor each completely.

16) $25b^2 + 230b + 45$

A) $5(5b - 1)(b - 9)$
B) $5(5b - 1)(b + 9)$
C) $5(5b + 1)(b + 9)$
D) $25(b + 1)(b - 9)$

17) $32m^3 - 136m^2 - 36m$

A) $4m(2m - 9)(4m + 1)$
B) $4m(2m + 9)(4m + 1)$
C) $32(m - 9)(m - 1)$
D) $5m(2m + 9)(3m + 10)$

18) $64b^2 + 224b + 196$

A) $16(4b - 7)(4b + 7)$
B) $4(4b + 7)^2$
C) $4(4b - 7)(4b + 7)$
D) $4(4b + 49)^2$

Solve each equation by taking square roots.

19) $6k^2 + 1 = 7$

A) $\left\{\frac{i\sqrt{329}}{7}, -\frac{i\sqrt{329}}{7}\right\}$

B) $\left\{\frac{i\sqrt{427}}{7}, -\frac{i\sqrt{427}}{7}\right\}$

C) $\left\{\frac{2i\sqrt{21}}{7}, -\frac{2i\sqrt{21}}{7}\right\}$

D) $\{1, -1\}$

Solve each equation by factoring.

20) $8p^2 + 100p - 167 = -7 - 7p^2$

A) $\left\{-\frac{5}{7}\right\}$

B) $\left\{-\frac{4}{3}, 8\right\}$

C) $\left\{-\frac{3}{5}, -8\right\}$

D) $\left\{\frac{4}{3}, -8\right\}$

Solve each equation by completing the square.

21) $m^2 + 14m - 63 = 0$

A) $\{16, -2\}$

B) $\{-7 + 4\sqrt{7}, -7 - 4\sqrt{7}\}$

C) $\{10, 8\}$

D) $\{7, 5\}$

Solve each equation with the quadratic formula.

22) $14p^2 + 2p + 10 = 10p^2$

A) $\left\{\frac{1 - \sqrt{385}}{12}, \frac{1 + \sqrt{385}}{12}\right\}$

B) $\left\{-\frac{\sqrt{42}}{3}, \frac{\sqrt{42}}{3}\right\}$

C) $\left\{\frac{-1 + i\sqrt{39}}{4}, \frac{-1 - i\sqrt{39}}{4}\right\}$

D) $\left\{\frac{-1 - i\sqrt{383}}{12}, \frac{-1 + i\sqrt{383}}{12}\right\}$

Simplify each expression.

23) $\left(-a^3b^3 - 10a^4b^3\right) + \left(-10a - a^4b^3 - 3a^3b^3\right) - \left(-11a - 14a^4b^2\right)$

A) $-11a^4b^3 - 4a^3b^3 + 14a^4b^2 - 7a$
B) $-11a^4b^3 + 2a^3b^3 + 14a^4b^2 - 7a$
C) $-11a^4b^3 - 4a^3b^3 + 14a^4b^2 + a$
D) $-11a^4b^3 + 2a^3b^3 + 14a^4b^2 + 7a$

Find each product.

24) $\left(-7n + 4\right)\left(7n^2 + 4n - 1\right)$

A) $-49n^3 + 23n - 4$
B) $8n^3 - 34n^2 + n + 28$
C) $-42n^3 - 77n^2 + 14n + 49$
D) $-42n^3 - 43n^2 + 37n + 35$

Divide.

25) $\left(n^3 - 2n^2 + 4n - 11\right) \div \left(n - 3\right)$

A) $n^2 + n + 10 + \dfrac{10}{n - 3}$
B) $n^2 + n + 7 + \dfrac{10}{n - 3}$
C) $n^2 + n + 7 + \dfrac{13}{n - 3}$
D) $n^2 + n + 6 + \dfrac{11}{n - 3}$

Factor each completely.

26) $175k^3 - 70k^2 - 25k + 10$

A) $5\left(7k^2 - 1\right)\left(5k - 2\right)$
B) $5\left(7k^2 - 1\right)\left(5k + 2\right)$
C) $\left(5k - 1\right)\left(7k^2 + 2\right)$
D) $5\left(7k^2 - 1\right)\left(7k^2 + 2\right)$

27) $81x^3 + 192$

A) $3\left(3x + 4\right)\left(9x^2 - 12x + 16\right)$
B) $3\left(3x + 4\right)\left(3x - 4\right)^2$
C) $3\left(3x - 4\right)\left(9x^2 + 12x + 16\right)$
D) $3\left(3x + 4\right)^3$

28) $x^4 - x^2 - 6$

A) $(x^2 + 6)(x^2 - 7)$
B) $(x^2 + 2)(x^2 - 3)$
C) $(x^2 + 3)(x^2 - 2)$
D) $(x^2 + 6)(x - 1)(x + 1)$

Simplify.

29) $3\sqrt{81x^5y}$

A) $75x^2y^2\sqrt{x}$
B) $-96y^2x\sqrt{2xy}$
C) $27x^2\sqrt{xy}$
D) $-5\sqrt{30y}$

30) $3\sqrt{8} + 3\sqrt{2} - 3\sqrt{2}$

A) $15\sqrt{2}$ B) $18\sqrt{2}$
C) $6\sqrt{2}$ D) $9\sqrt{2}$

31) $\dfrac{\sqrt{12}}{\sqrt{64}}$

A) $\dfrac{\sqrt{6}}{10}$ B) $\dfrac{20}{3}$
C) $\dfrac{\sqrt{3}}{4}$ D) 1

32) $(64n^6)^{\frac{1}{2}}$

A) $8n^3$ B) n^{15}
C) $729n^6$ D) $7776n^{10}$

Simplify. Your answer should contain only positive exponents.

33) $\left(\dfrac{2v \cdot 2u^2v^{-2}}{vu^4}\right)^{-1}$

A) $\dfrac{1}{u^5v}$ B) $\dfrac{v^2u^2}{4}$
C) $\dfrac{1}{u^9v^6}$ D) $\dfrac{u^6}{v}$

Solve each equation. Remember to check for extraneous solutions.

34) $-12 = -2\sqrt{-1 - 37b}$

A) $\{6, -6\}$ B) $\{-1\}$
C) $\{6\}$ D) $\{5\}$

Simplify each expression.

35) $\frac{x+3}{6x^2} \cdot \frac{10x^2 - 20x}{6 - x - x^2}$

A) $\frac{x+3}{2x^2}$ B) $\frac{x+6}{x+8}$

C) $-\frac{5}{3x}$ D) $\frac{10}{x-5}$

36) $\frac{2x}{x+8} - \frac{2}{x-8}$

A) $\frac{2x^2 - 18x - 16}{(x-8)(x+8)}$

B) $\frac{3x-2}{16}$

C) $\frac{19x^2 - 14x}{(x-8)(5x+6)}$

D) $\frac{12x^2 - 40x - 48}{3x(5x+6)}$

37) $\frac{\frac{1}{x} - \frac{x}{x+4}}{\frac{x-5}{3} + \frac{x}{3}}$

A) $\frac{3x + 12 - 3x^2}{2x^3 + 3x^2 - 20x}$

B) $\frac{81 - 9x^2}{x^3 - 5x^2 + 9x + 36}$

C) $\frac{x^3 - 7x^2 + 22x - 60}{2x^3 + 2x^2 + x + 100}$

D) $\frac{3x^2 + 12x - 27}{5x - 45 - x^2}$

Solve each equation. Remember to check for extraneous solutions.

38) $\frac{1}{n^2 - n} + \frac{1}{n^3 - n} = \frac{n}{n^2 - 1}$

A) $\left\{2, -\frac{17}{8}\right\}$ B) $\{2, -6\}$

C) $\left\{-\frac{1}{6}, -6\right\}$ D) $\{2\}$

Solve each equation.

39) $125^{x+1} = 625$

A) $\left\{\frac{14}{9}\right\}$ B) $\{0\}$

C) $\left\{\frac{1}{3}\right\}$ D) $\left\{\frac{3}{10}\right\}$

Evaluate each expression.

40) $\log_2 32$

A) 3 B) −5
C) 16 D) 5

Expand each logarithm.

41) $\ln\left(w\sqrt[3]{u \cdot v}\right)$

A) $2\ln u - 2\ln v$
B) $4\ln u - 2\ln v$
C) $\ln u + \ln v + 2\ln w$
D) $\ln w + \frac{\ln u}{3} + \frac{\ln v}{3}$

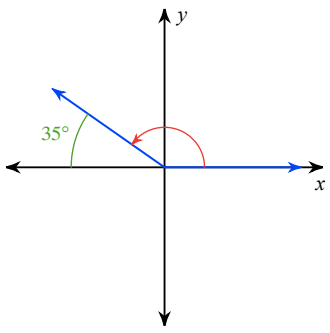
Solve each equation.

42) $\log_9 5x + \log_9 3 = 2$

A) $\{178\}$ B) $\left\{\frac{11}{2}\right\}$
C) $\left\{-\frac{67}{12}\right\}$ D) $\left\{\frac{27}{5}\right\}$

Find the measure of each angle.

43)



A) 125° B) 135°
C) 215° D) 145°

Convert each degree measure into radians and each radian measure into degrees.

44) $\frac{47\pi}{9}$

A) 825° B) 940°
C) 950° D) 780°

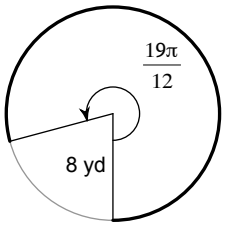
Find a positive and a negative coterminal angle for each given angle.

45) $-72°$

A) $288°$ and $-432°$
B) $198°$ and $-522°$
C) $18°$ and $-522°$
D) $18°$ and $-702°$

Find the length of each arc.

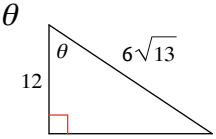
46)



A) $\frac{845\pi}{12}$ yd
B) $\frac{16\pi}{3}$ yd
C) $\frac{38\pi}{3}$ yd
D) $\frac{121\pi}{3}$ yd

Find the value of the trig function indicated.

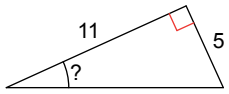
47) $\cos\theta$



A) $\frac{\sqrt{13}}{3}$
B) $\frac{2\sqrt{13}}{13}$
C) $\frac{2}{3}$
D) $\frac{3}{2}$

Find the measure of the indicated angle to the nearest degree.

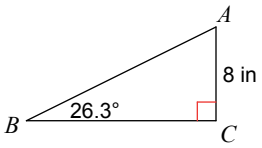
48)



A) $24°$
B) $25°$
C) $27°$
D) $63°$

Solve each triangle. Round answers to the nearest tenth.

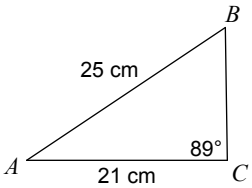
49)



A) $m\angle A = 63.7°$, $a = 16.2$ in, $c = 18.1$ in
B) $m\angle A = 64.2°$, $a = 16.2$ in, $c = 18.1$ in
C) $m\angle A = 62.2°$, $a = 16.2$ in, $c = 18.1$ in
D) $m\angle A = 65.2°$, $a = 16.2$ in, $c = 18.1$ in

Solve each triangle. Round your answers to the nearest tenth.

50)



A) $m\angle A = 32°$, $m\angle B = 59°$, $a = 13.9$ cm
B) $m\angle A = 39°$, $m\angle B = 52°$, $a = 13.9$ cm
C) $m\angle A = 33.9°$, $m\angle B = 57.1°$, $a = 13$ cm
D) $m\angle A = 33.9°$, $m\angle B = 57.1°$, $a = 13.9$ cm

Answers to Dual Credit: Math 110/Math 120 (ID: 1)

1) C
2) B
3) A
4) A
5) B
6) D
7) C
8) D
9) C
10) A
11) C
12) A
13) B
14) C
15) C
16) C
17) A
18) B
19) D
20) D
21) B
22) C
23) C
24) A
25) B
26) A
27) A
28) B
29) C
30) C
31) C
32) A
33) B
34) B
35) C
36) A
37) A
38) D
39) C
40) D
41) D
42) D
43) D
44) B
45) A
46) C
47) B
48) A
49) A
50) D