Name_____ **Date**_____

Summer 2010 Math Assignment for Students Taking Precalculus

This packet is a review of the math concepts for Precalculus. This will be your first grade of the school year 2010-2011 in your math course. Each problem must be done neatly and numbered on separate paper. All final answers should be written on these sheets on the blanks or grids provided. You must show work to receive full credit for each problem. These sheets and your solutions must be turned in at registration. Simplify all answers and do not give any decimals unless the direction says to round your answer.

1. Let $f(x) = \begin{cases} 5x^3 - 2 \text{ if } x < -6 \\ 3x^2 - 2 \text{ if } -6 \le x < 7 \\ 7 + 2x \text{ if } x \ge 7 \end{cases}$. Find $f(-6)$, $f(12)$, and $f(-10)$.

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Find the inverse of the given function.

2. $f(x) = \dfrac{7x - 3}{16}$

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3. Translate $f(x) = |x|$ so that the vertex is at (6, –3). Write a rule for the new function $g(x)$ and graph $g(x)$.

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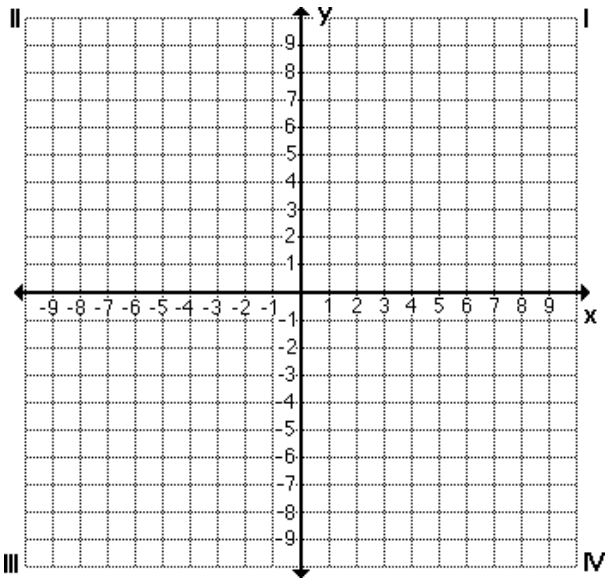

4. Given $f(x) = x^3$ and $g(x) = 4x + 3$, find $g(f(3))$.

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Simplify.

5. $\sqrt{162} + \sqrt{32} - \sqrt{50}$

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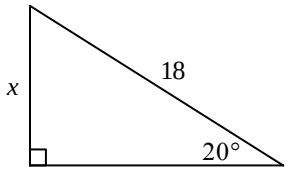
Find the value of *x*. Round to the nearest tenth.

6.



Not drawn to scale

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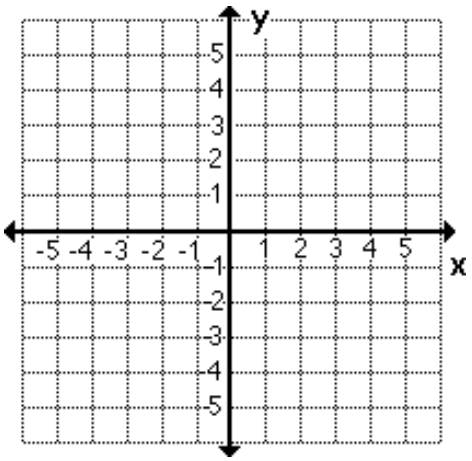
7. Factor $5x^2 - 22x - 15$.

8. Factor $16x^2 - 25$.

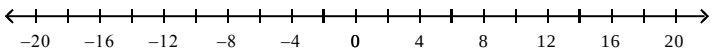
9. Simplify $\frac{\sqrt{7}}{\sqrt{5}}$ by rationalizing the denominator.

10. Dan paid a total of $25.80 last month for his international calls. He makes international calls only to England. Dan pays $0.06 per minute in addition to $10.98 fixed monthly payment. How many minutes of international calls did Dan make last month?

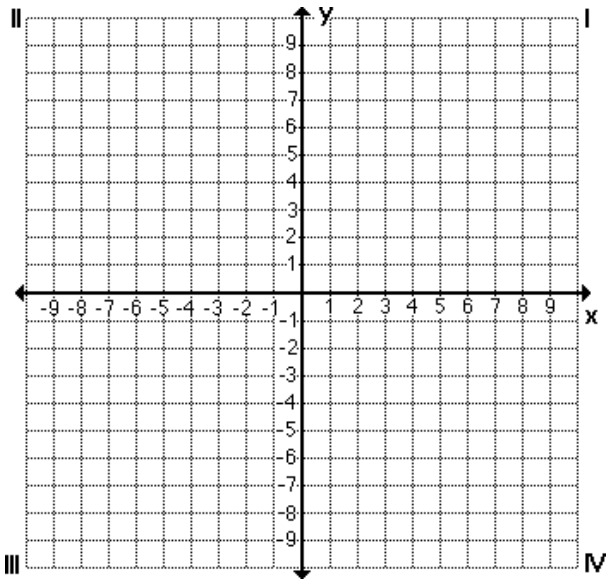
11. Write the function $5x + 10y = -20$ in slope-intercept form. Then graph the function.



12. Solve the inequality $|12 + 4x| > 16$ and graph the solution set.



13. Consider the function $f(x) = -4x^2 - 8x + 10$. Determine whether the graph opens up or down. Find the axis of symmetry, the vertex and the *y*-intercept. Graph the function.



14. Find the zeros of the function $h(x) = x^2 + 23x + 60$ by factoring.

15. Solve the inequality $x^2 + x - 6 \geq -4$ by using a table and a graph.

16. For $h(x) = 2x^2 + 6x - 9$ and $k(x) = 3x^2 - 8x + 8$, find $h(x) - 2k(x)$.

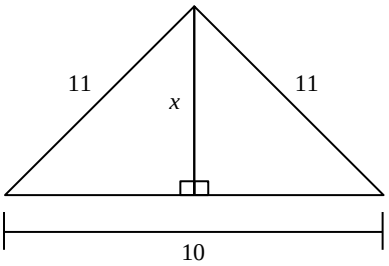
17. Find the product $(5x - 3)(x^3 - 5x + 2)$.

18. Factor $x^3 + 5x^2 - 9x - 45$.

19. Divide $\frac{5x^3}{3x^2y} \div \frac{25}{3y^9}$. Assume that all expressions are defined.

20. Solve the equation $-6 + \sqrt{x - 5} = -2$.

21. Find x.



22. Simplify $(11 + i) + (3 - 15i)$.

23. Simplify $(8 + 10i)(5 - 8i)$.

24. Simplify $\frac{3}{6 + 7i}$.

25. Consider $f(x) = 2x^2 + 8x + 3$. Determine whether the function has a maximum or minimum value. Then find the value of the maximum or minimum.

26. Solve the equation $x^2 - 9x + 20 = 0$.

27. Find the exact solution of $-x^2 + 3x + 7 = 0$ by using the Quadratic Formula.

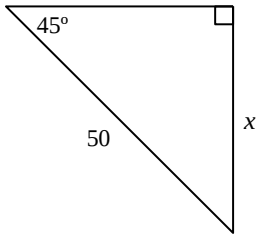
28. Simplify $\sqrt{25x^{20}y^{14}}$.

29. Solve the system of equations algebraically.

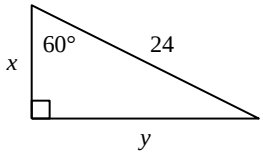
$6x - 3y = 6$

$4x - 6y = 4$

30. Use a trigonometric function to find the exact value of *x*.



31. Find *x* and *y*.



Find the midpoint of the line segment with endpoints at the given coordinates.

32. $(11, -13)$ and $(-4, -11)$

Find the distance between the pair of points with the given coordinates.

33. $(-11, 10)$ and $(1, -8)$

34. Simplify the expression: $\dfrac{64^{\frac{5}{4}}}{64^{\frac{3}{4}}}$

35. Subtract $\dfrac{2x^2-48}{x^2-16} - \dfrac{x+6}{x+4}$. Identify any *x*-values for which the expression is undefined.