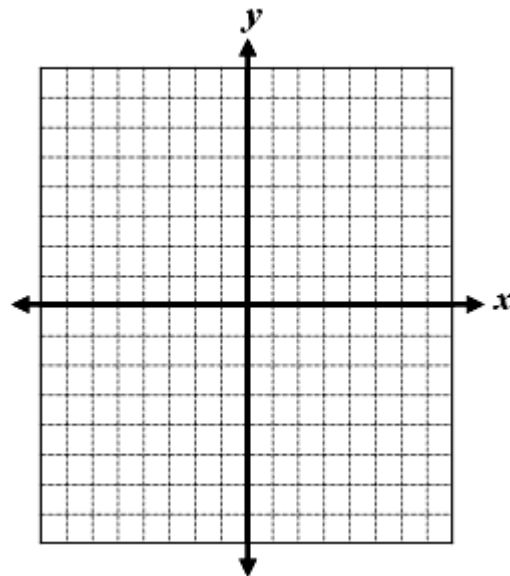


<p>1. Multiply and simplify.</p> <p>a) <math>\sqrt{5} \cdot \sqrt{125}</math></p>    <p>b) <math>\sqrt{5} + \sqrt{125}</math></p>	<p>2. Multiply and simplify:</p> $3z^2(2z^3)^2$
<p>3. Simplify:</p> $9z\sqrt{8z} - 3\sqrt{2z^3}$	<p>4. Simplify:</p> $(x^2 + 3) - [3x + (8 - x^2)]$
<p>5. Simplify:</p> <p>a) <math>(3x - 2)^2</math></p>  <p>b) <math>(3x + 2)^2</math></p>  <p>c) <math>(3x + 2)(3x - 2)</math></p>	<p>6. Simplify and identify the domain.</p> $\frac{8x}{x-3} - \frac{24}{x-3}$
<p>7. Divide:</p> $\left(\frac{2}{x} - \frac{2}{x+1}\right) \div \left(\frac{4}{x^2-1}\right)$	<p>8. Completely factor.</p> $x^3 + 2x^2 - 4x - 8$

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9. If  $f(x) = (x+2)^2 - 1$ , graph  $f(x)$  and  $g(x) = f(x+2)$  on the same axes. Describe the transformation of  $f(x)$  to produce  $g(x)$ .



10. Solve:  $x^2 - 6x - 27 = 0$  by:

a) Factoring

b) Quadratic Formula

c) Completing the Square

11. Solve:

$$\frac{x-2}{x+2} + \frac{4}{x+2} + 4 = 0$$

12. Solve:

$$3x^2 + 12x = 63$$

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13. Simplify each expression without using a calculator:

a.  $\log_2 8$

b.  $\log 1000$

c.  $\ln e^5$

d.  $\log_3 \frac{1}{81}$

14. Write each equation in logarithmic form.

a)  $2^3 = 8$

b)  $10^4 = 10,000$

15. Solve:

$$x^4 + x^2 - 6 = 0$$

16. Solve by COMPLETING THE SQUARE:

$$2x^2 + 8x = 10$$

17. Solve:

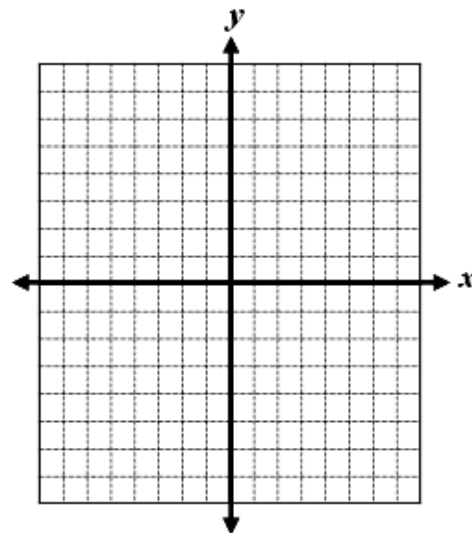
$$2x^2 + 7x - 15 = 0$$

18. Solve. Write your solution in interval form and sketch the solution set.

$$-3 \leq 2(x+4) < 4$$

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19. Sketch the graph of  $f(x) = x^2$  and  $g(x) = (x-1)^2 + 2$  on the same axes. List the vertex, x and y intercepts, and the domain and the range of each function.



20. Factor completely:

$$4x^2y^2z + 10xy^2z - 6y^2z$$

21. Factor completely:

$$16x^2 - 81$$

22. Factor completely:

$$4x(2x-1) + (2x-1)^2$$

23. Solve. Leave your answer in simplest radical form.

$$3x^2 + 6x + 2 = 0$$

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24. Factor each polynomial completely:

a.  $x^2 - 2x - 24$

b.  $x^2 + 3x - 28$

c.  $x^2 + 12x + 32$

d.  $x^2 + 16$

e.  $3x^2 + 5x - 2$

f.  $2x^2 + 28x + 96$

g.  $3x^2 - 27$

h.  $3x^2 - 6x - 72$

25. Simplify:

a)  $\sqrt{242} + \sqrt{200}$

b)  $\sqrt{242} \cdot \sqrt{200}$

26. Simplify using imaginary numbers.

a)  $\sqrt{-24}$

b)  $(2+5i)(2-5i)$

c)  $(2+5i)-(7-3i)$

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