

## A2H - Chapter 5 Review

I. Sketch each function. Plot at least one point on each piece of the graph. State the domain in set notation. State the range in set notation, if possible. State the end behavior.

1. $y = -\frac{3}{x^2}$	2. $y = \frac{2x-4}{x-3}$	3. $y = \frac{2x^2-6x}{x^2-9}$	4. $y = \frac{-x^4-x^3}{x+1}$
5. $y = \frac{10}{x+5}$	6. $y = \frac{6}{x^2+1}$	7. $y = \frac{x^2-6x+9}{2x^2-x-3}$	8. $y = \frac{x^2-3x-4}{x^2-4}$

II. Perform the indicated operation.

9. $\frac{x}{2x^2y} + \frac{5x}{y}$	10. $(15x^3 - 3x^2) \cdot \frac{4x^2 + 4x - 24}{15x^2 - 3x}$	11. $\frac{x+5}{x^2+x-6} - \frac{x-7}{x^2-4}$
12. $\frac{x^3 - 2x^2}{3x+6} \div \frac{5x^3 - 29x^2 + 20x}{3x^2 - 9x - 30}$	13. $(x^3+1)(x+1)^{-1}$	

III. Simplify each complex fraction.

14. $\frac{\frac{x-2}{x+2}}{\frac{x^2+4x+4}{x^2-4x+4}}$	15. $\frac{\frac{3}{x-2}}{\frac{1}{3} + \frac{5}{x-2}}$	16. $\frac{3x^{-2} - 5(2x+1)^{-1}}{4 + (4x^2 - 1)^{-1}}$
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IV. Solve the equations below and check for extraneous solutions.

17. $\frac{3}{x+1} = \frac{2}{x-4}$	18. $\frac{4}{2x-3} + \frac{x}{x+1} = \frac{-8x}{2x^2-x-3}$
19. $\frac{5}{x} - 2 = \frac{2}{x+3}$	20. $\frac{18}{x^2-3x} - \frac{6}{x-3} = \frac{5}{x}$

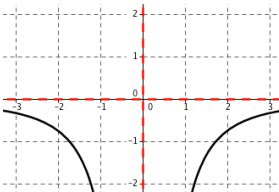
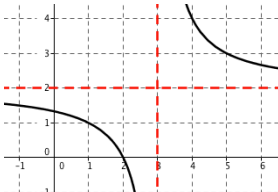
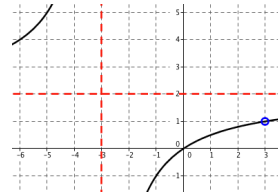
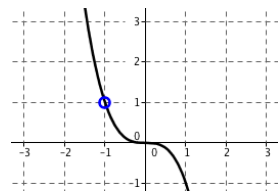
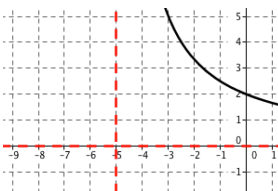
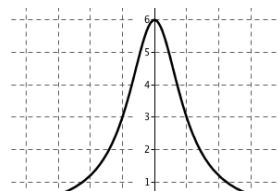
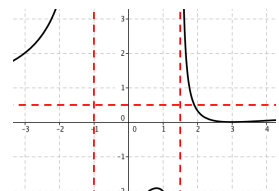
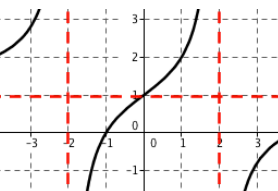
V. Write an equation for each statement. Then solve the equation.

21. y varies inversely as x. If y = 2 when x = 8, find x when y = 14.
22. y varies jointly with x and z. If y = 20 when x = 2 and z = 5, find y when x = 3 and z = 8.
23. y varies directly as x. If y = -16 when x = 6, find y when x = 1.5.

VI. Translate each statement into a formula. Use k as the constant of variation. Then solve.

24. Disregarding wind resistance, the distance a body falls from rest varies directly as the square of the time it falls. If a skydiver falls 64 ft in 2 seconds, how far will he fall in 10 seconds?
25. The frequency of a vibrating string varies inversely as its length. A string 3 feet long vibrates 175 cycles per second. Find the frequency of a 5 foot string.

# ANSWERS

<p>1.</p>  <p>D: <math>\{x x \neq 0\}</math> R: <math>\{y y &lt; 0\}</math>  <math>x \rightarrow -\infty</math> <math>y \rightarrow 0</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow 0</math></p>	<p>2.</p>  <p>D: <math>\{x x \neq 3\}</math> R: <math>\{y y \neq 2\}</math>  <math>x \rightarrow -\infty</math> <math>y \rightarrow 2</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow 2</math></p>	<p>3.</p>  <p>D: <math>\{x x \neq -3, 3\}</math> R: <math>\{y y \neq 1, 2\}</math>  <math>x \rightarrow -\infty</math> <math>y \rightarrow 2</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow 2</math></p>		
<p>4.</p>  <p>D: <math>\{x x \neq -1\}</math> R: <math>\{y y \neq 1\}</math>  <math>x \rightarrow -\infty</math> <math>y \rightarrow \infty</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow -\infty</math></p>	<p>5.</p>  <p>D: <math>\{x x \neq -5\}</math> R: <math>\{y y \neq 0\}</math>  <math>x \rightarrow -\infty</math> <math>y \rightarrow 0</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow 0</math></p>	<p>6.</p>  <p>D: <math>\{x x \in R\}</math> R: <math>\{y 0 &lt; y \leq 6\}</math>  <math>x \rightarrow -\infty</math> <math>y \rightarrow 0</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow 0</math></p>		
<p>7.</p>  <p>D: <math>\{x x \neq -1, \frac{3}{2}\}</math> R: can't do without a calculator  <math>x \rightarrow -\infty</math> <math>y \rightarrow \frac{1}{2}</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow \frac{1}{2}</math></p>	<p>8.</p>  <p>D: <math>\{x x \neq \pm 2\}</math> R: <math>\{y y \in R\}</math>  <math>x \rightarrow -\infty</math> <math>y \rightarrow 1</math>  <math>x \rightarrow \infty</math> <math>y \rightarrow 1</math></p>	<p>9. <math>\frac{1+10x^2}{2xy}</math></p>		
<p>10. <math>4x(x+3)(x-2)</math></p>	<p>11. <math>\frac{11x+31}{(x+2)(x-2)(x+3)}</math></p>	<p>12. <math>\frac{x(x-2)}{5x-4}</math></p>	<p>13. <math>x^2 - x + 1</math></p>	
<p>14. <math>\frac{(x-2)^3}{(x+2)^3}</math></p>	<p>15. <math>\frac{9}{x+13}</math></p>	<p>16. <math>\frac{-10x^3+17x^2-3}{16x^4-3x^2}</math></p>	<p>17. 14</p>	
<p>18. -5, -4</p>	<p>19. <math>\frac{-3 \pm \sqrt{129}}{4}</math></p>	<p>20. no solution</p>		
<p>21.  <math>y = 16/x</math>  <math>x = 8/7</math></p>	<p>22.  <math>y = 2xz</math>  <math>y = 48</math></p>	<p>23.  <math>y = \frac{-8}{3}x</math>  <math>y = -4</math></p>	<p>24.  <math>b = kt^2</math>  <math>b = 16t^2</math>  <math>b = 1600ft</math></p>	<p>25.  <math>f = k/l</math>  <math>f = 525/l</math>  <math>f = 105 \text{ cycle/sec}</math></p>

