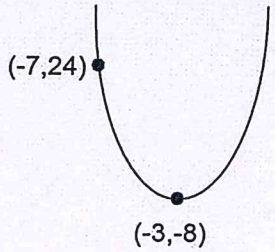
Bellwork Alg 2 Final Exam Review Fall 2019

1. Write the equation of the inverse relation: $y = 2\left(\frac{6x-5}{3}\right)^5 + 8$

2. Write the equation of this parabola in Vertex Form:



3. State the end behavior of each.

a) $y = 12x^7 - 8x^4 - x^3 + 7x - 81$

b) $f(x) = x^3(8-x)(x+5)^2(x-3)^2$

4. Find this quotient: $y = \frac{6x^4 - 37x^3 + 65x^2 - 30x + 8}{3x - 8}$

5. Given 7 and –2 are real zeros, find the remaining Complex Roots, real and nonreal. Simplify nonreal roots, round real roots to the nearest hundredth.

$4x^4 - 32x^3 + 21x^2 + 83x - 238$

6. Solve. $\frac{7x}{(x+2)} + \frac{14}{x^2+5x+6} = \frac{8x}{(x+3)}$

7. Simplify each.

a) $\frac{4x^3 - 12x^2 - 40x}{3x^4 - 75x^2} \cdot \frac{x^2 + 8x + 15}{2x^2 + 6x + 4}$

b) $\frac{\frac{5}{x-6}}{\frac{7}{x^2-10x+24} - \frac{9}{x-4}}$

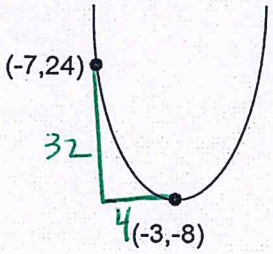
Bellwork Alg 2 Final Exam Review Fall 2019 ANSWERS

1. Write the equation of the inverse relation: $y = 2\left(\frac{6x-5}{3}\right)^5 + 8$

$$x = 2\left(\frac{6y-5}{3}\right)^5 + 8$$

$$f^{-1}(x) = \frac{3\sqrt[5]{\frac{x-8}{2}} + 5}{6}$$

2. Write the equation of this parabola in Vertex Form:



$$y = 2(x+3)^2 - 8$$

parent function $\square$ 16 / 4

$$a = \frac{32}{16} = 2$$

3. State the end behavior of each.

a) $y = 12x^7 - 8x^4 - x^3 + 7x - 81$

POS ODD

$(\swarrow, \nearrow)$

b) $f(x) = x^3(8-x)(x+5)^2(x-3)^2$

$(x^3)(-x)(x^2)(x^2) \rightarrow -x^8$

NEG EVEN

$(\swarrow, \searrow)$

4. Find this quotient: $y = \frac{6x^4 - 37x^3 + 65x^2 - 30x + 8}{3x - 8}$

$$\begin{array}{r} 2x^3 - 7x^2 + 3x - 2 \\ 3x-8 \overline{)\,6x^4 - 37x^3 + 65x^2 - 30x + 8} \\ -(6x^4 - 16x^3) \\ \hline -21x^3 + 65x^2 \\ -(-21x^3 + 56x^2) \\ \hline 9x^2 - 30x \\ -(9x^2 - 24x) \\ \hline -6x + 8 \\ -(-6x + 16) \\ \hline -8 \end{array}$$

$2x^3 - 7x^2 + 3x - 2 \quad R = -8$

5. Given 7 and –2 are real zeros, find the remaining Complex Roots, real and nonreal. Simplify nonreal roots, round real roots to the nearest hundredth.

$4x^4 - 32x^3 + 21x^2 + 83x - 238$

7	4	-32	21	83	-238
		28	-28	-49	238
-2	4	-4	-7	34	0
		-8	24	-34	
	4	-12	17		

$4x^2 - 12x + 17$

$b^2 - 4ac = -128$

$\frac{12 \pm \sqrt{-128}}{8}$

$\frac{12 \pm \sqrt{-64 \cdot 2}}{8}$

$\frac{12 \pm 8i\sqrt{2}}{8}$

$\frac{3 \pm 2i\sqrt{2}}{2}$

6. Solve. $\frac{7x}{(x+2)} + \frac{14}{x^2+5x+6} = \frac{8x}{(x+3)}$

$(x+3)(x+2)$

$\frac{(x+3)}{(x+3)} \cdot \frac{7x}{x+2} + \frac{14}{(x+3)(x+2)} = \frac{8x}{x+3} \cdot \frac{(x+2)}{(x+2)}$

$7x(x+3) + 14 = 8x(x+2)$

$7x^2 + 21x + 14 = 8x^2 + 16x$

$0 = x^2 - 5x - 14$

$0 = (x-7)(x+2)$

$x = -2, 7$

$x = 7$

7. Simplify each.

a) $\frac{4x^3 - 12x^2 - 40x}{3x^4 - 75x^2} \cdot \frac{x^2 + 8x + 15}{2x^2 + 6x + 4}$

$4x(x^2 - 3x - 10)$ $3x^2(x^2 - 25)$ $2(x^2 + 3x + 2)$

$= \frac{4x(x-5)(x+2)}{3x^2(x+5)(x-5)} \cdot \frac{(x+5)(x+3)}{2(x+2)(x+1)}$

$= \frac{2(x+3)}{3x(x+1)}$

b) $\frac{\frac{5}{x-6}}{\frac{7}{x^2 - 10x + 24} - \frac{9}{x-4}} \cdot \frac{(x-4)(x-6)}{(x-4)(x-6)}$

$(x-6)(x-4)$

$= \frac{5(x-4)}{7 - 9(x-6)}$

$= \frac{5(x-4)}{7 - 9x + 54}$

$= \frac{5(x-4)}{-9x + 61}$