

Algebra II Unit 9 Review

1. Find the domain, range, x & y-intercepts, asymptotes & sketch a graph of: $y = \frac{5x}{x^2 - 9}$
2. Solve each of the following: a) $6^{3x+9} = 36^{2x-2}$ b) $4^{x+2} = 10^{x-1}$ c) $\log_x 8 = 4$
3. Solve each: a) $\log_2 8 = x$ b) $\log_3(x + 4) = 2$ c) $2^x = 15$
4. Suppose $x = 2$, $y = 5$ and $z = 7$.
 a) Find k if x and y vary inversely. b) Find k if z varies jointly with x and y .
5. Suppose z varies inversely with x and y . In one situation $x = 3$, $y = -2$ and $z = 10$. Find z when $x = -4$ and $y = 8$.
6. Know how to do a word problem similar to the group quiz using variations.
7. Be able to graph and find horiz & vertical asymptotes to problems that involve

$$y = \frac{a}{x-h} + k \text{ and } y = \frac{ax+b}{cx+d}$$
8. Simplify each: a) $\frac{81x^9}{y^4} \cdot \frac{x^2}{36x^5y^2}$ b) $\frac{x^2 - 3x + 2}{25x} \div \frac{x-1}{5x^2}$ c) $\frac{3}{x+5} - \frac{4}{x+1}$
9. Solve each: a) $\frac{x+1}{x+3} = \frac{6}{x}$ b) $\frac{2}{x-3} = \frac{5}{x+1}$ c) $\frac{3x}{x-2} = 1 + \frac{6}{x-2}$

Answers:

1. D: All reals except $x = \pm 3$
 R: All reals
 x-int = 0
 y-int = 0
 Vert Asymp $x = \pm 3$
 Horiz Asymp = none
2. a) $x = 13$ b) 5.537 c) $x = 1.68$
3. a) $x = 3$ b) $x = 5$ c) $x = 3.906$
4. a) $k = 10$ b) $k = 7/10$
5. $z = 15/8$
6. ---
7. ---
8. a) $9x^6 / 4y^6$ b) $x(x-2) / 5$ c) $-x - 17 / (x+5)(x+1)$
9. a) $x = 7.42$ and -2.42 b) $x = 17/3$ c) $x = 2$