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Unit 3 Supplementary Review

Rewrite using exponents:

1. $\sqrt[3]{x^2}$ $x^{2/3}$

2. $\sqrt[5]{(4y)^3}$ $(4y)^{3/5}$

3. $\sqrt{a^9}$ $a^{9/2}$

Rewrite using radicals:

4. $y^{4/2}$ $\sqrt[2]{y^4}$

5. $(3y)^{6/5}$ $\sqrt[5]{(3y)^6}$

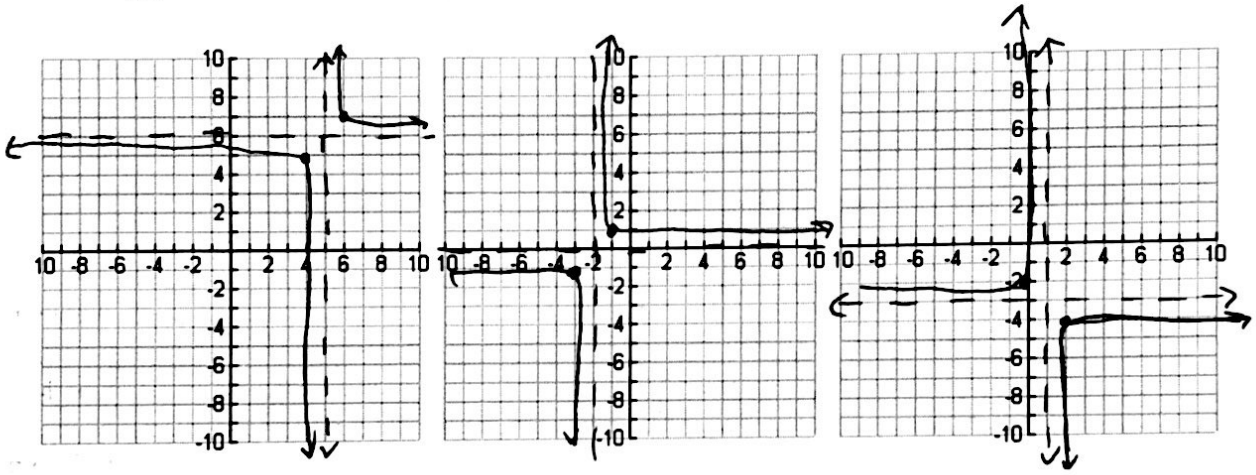
6. $2y^{1/7}$ $2\sqrt[7]{y}$

Graph each function:

7. $y = \frac{1}{x-5} + 6$

8. $y = \frac{1}{x+2}$

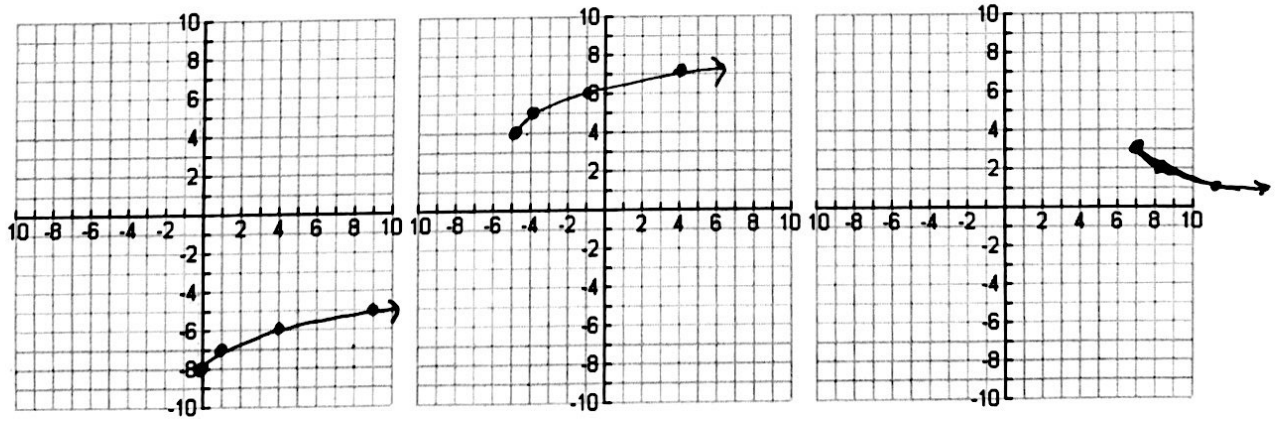
9. $y = \frac{-1}{x-1} - 3$



10. $y = \sqrt{x} - 8$

11. $y = \sqrt{x+5} + 4$

12. $y = -\sqrt{x-7} + 3$



Writing equations:

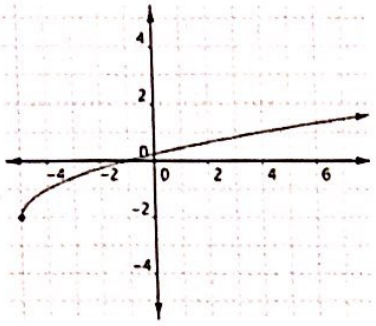
$y = \sqrt{x+2} - 1$

13. The parent function $y = \sqrt{x}$ is translated 2 units to the left and one unit down.

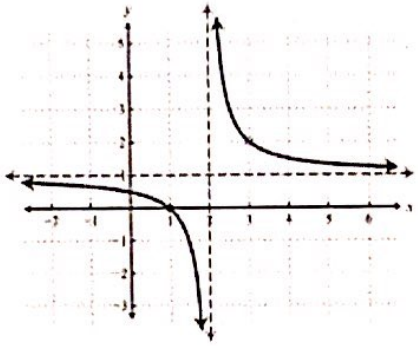
14. The parent function $y = \frac{1}{x}$ is translated 3 units up and reflected.

$y = \frac{-1}{x} + 3$

15. $y = \sqrt{x+5} - 2$



16.



$y = \frac{1}{x-2} + 1$

Solve each equation:

17. $2\sqrt{x+5} - 1 = 3$

$2\sqrt{x+5} = 4$

$\sqrt{x+5} = 2$

$x + 5 = 4$

$x = -1$ ✓

18. $2\sqrt{x+8} + 6 = 2$

$2\sqrt{x+8} = -4$

$\sqrt{x+8} = -2$

$x + 8 = 4$

$x = -4$

NO Solution

$10 \neq 2$

19. $\frac{8}{3x+2} = \frac{4}{2x}$

$16x = 12x + 8$

$4x = 8$

$x = 2$ ✓

20. $\frac{4}{x+2} = \frac{3}{x}$

$4x = 3x + 6$

$x = 6$ ✓

Variation:

21. y varies inversely with x. If $y = 4$ when $x = 28$, find x when $y = 16$.

$y = k/x \quad 4 = k/28 \quad k = 28(4) = 112 \quad 16 = 112/x$ $\quad x = 7$

22. y varies directly with x. If $y = 9$ when $x = 18$, find y when $x = 24$.

$y = kx \quad 9 = k(18) \quad k = 1/2 \quad y = 1/2\,(24) = 12$ $\quad y = 12$

23. For a fixed number of miles, the gas mileage of a car (miles/gallon) varies inversely with the number of gallons used. One year an employee driving a truck averaged 24 miles per gallon and used 750 gallons of gas. If the next year, to drive the same number of miles the employee drove a compact car averaging 39 miles per gallon, how many gallons of gas would be used?

$y = k/x$

$24 = k/(750)$

$k = 24(750)$

$k = 18000$

$39 = 18000/x$

$\frac{39x}{39} = \frac{18000}{39}$

$x = 461.538$ gallons of gas