

ANSWERS

REVIEW - UNIT 3

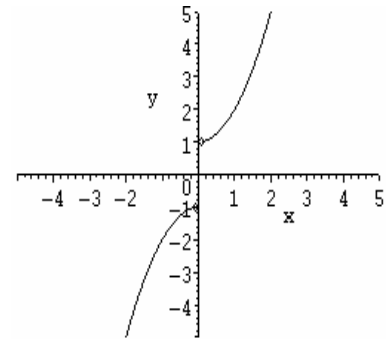
1. a) $\left\{\left(\frac{16}{13}, \frac{18}{13}\right)\right\}$ b) $\left\{\left(\frac{19}{5}, \frac{8}{5}\right), (-4, -1)\right\}$ 2. $\{(21, 9)\}$ 3. $\frac{1}{(2x+2h+1)(2x+1)}$ 4. $\frac{1}{8}$

5. 1) Increasing on $(-5, -3)$; decreasing on $(-3, -1)$, $(3, 5)$; constant on $(-1, 3)$
 2) $(-4, 1)$, $(0, -1)$, $(4, -2)$
 3) $(-3, 3)$ and $(1, -1)$ are on the graph. 4) Yes

6. $4x - 3y = -15$ 7. $y = -\frac{2}{3}x - \frac{8}{5}$, $-\frac{8}{5}$ 8. $3x + y = -15$

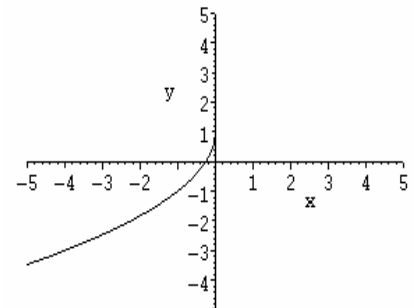
9. a) $p = -\frac{3}{4}x + 125$ b) 120 units c) $R(x) = -\frac{3}{4}x^2 + 125x$

10. a) (1) Domain: $(-\infty, 0) \cup (0, +\infty)$, b)
 Range: $(-\infty, -1) \cup (1, +\infty)$
 (2) x -intercepts: None
 y -intercept: None ($x = 0$ is not in the Domain)
 (3) about the origin (4) odd
 b) $(-\infty, 0)$, $(0, +\infty)$



11. Domain: $(-\infty, -2) \cup (2, +\infty)$, x -intercepts: $x = \pm\sqrt{5}$, y -intercept: None

12. Reflections: about the x -axis and about the y -axis
 Stretching: by a factor of 2
 Translation: 1 unit upward
 Domain: $(-\infty, 0]$ Range: $(-\infty, 1]$



13. about the origin 14. a) neither b) even c) odd d) even

15. $f(x) = x^{\frac{3}{2}}$, $g(x) = 5x^2 - 3x + 4$ 16. a) $(f + g)(x) = \frac{1}{x^2} + \sqrt{1-x}$

Domain: $(-\infty, 0) \cup (0, 1]$; $(f \cdot g)(x) = \frac{\sqrt{1-x}}{x^2}$ Domain: $(-\infty, 0) \cup (0, 1]$

$\left(\frac{f}{g}\right)(x) = \frac{1}{x^2\sqrt{1-x}}$ Domain: $(-\infty, 0) \cup (0, 1)$ b) $\frac{1}{18}$ c) 1 d) $(f \circ g)(x) = \frac{1}{1-x}$

Domain: $(-\infty, 1)$; $(g \circ f)(x) = \frac{\sqrt{x^2-1}}{|x|}$ Domain: $(-\infty, -1] \cup [1, +\infty)$

17. a) 3 b) 5 18. a, c, and d.

19. Increasing on $(3, +\infty)$
Decreasing on $(-\infty, -2), (0, 3)$
Constant on $(-2, 0)$
Continuous on $(-\infty, 0), (0, +\infty)$

