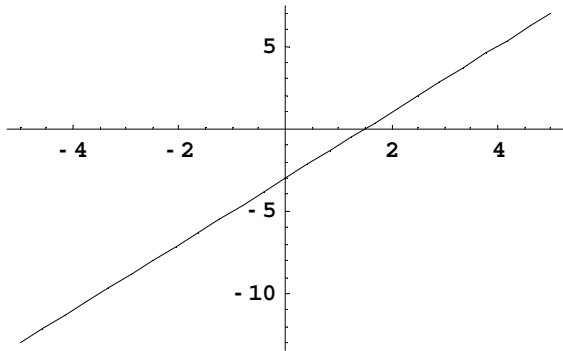


Math 1021 Final Review Answer Key

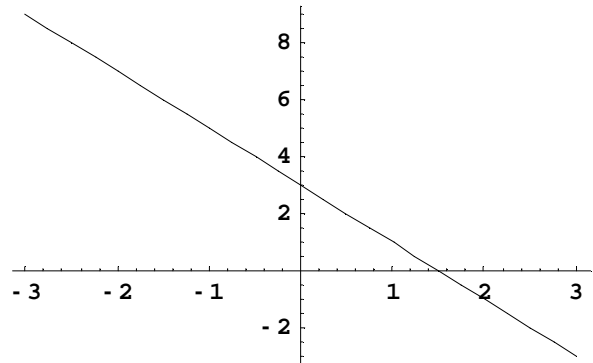
- 1) (a) $\frac{a^6}{4b^4}$ (b) $\frac{y^{12}}{x^6}$ (c) $\frac{2x}{3y^8}$ (d) $\frac{1}{n^4}$ (e) $\frac{x^{12}}{y^8}$
(f) $9x^2$ (g) $\frac{2x^2}{y}$ (h) $\frac{y}{x^{1/2}}$
- 2) (a) $2x^3 - x^2 + 2x + 4$ (b) $2x^3 - 5x^2 + 6$
(c) $4x^5 - 4x^4 - 3x^3 + 14x^2 + 4x - 5$ (d) Quotient = $x - 2$; Remainder = $4x + 3$
(e) $4x^2 + 12xy + 9y^2$ (f) $4x^2 - 12xy + 9y^2$ (g) $4x^2 - 9y^2$ (h) $12x^2 - x - 6$
- 3) (a) 1 (b) $\frac{2y^2 - 9y - 6}{(y-2)^2(y+2)}$ (c) $-\frac{1}{x}$ (d) $\frac{2x-1}{x-2}$
- 4) (a) $2|xz|y^2\sqrt{3xy}$ (b) $\frac{2a^2}{3b}\sqrt[3]{a}$ (c) $3 - \sqrt[4]{2}x$
- 5) (a) $(x+1)^{15/2}$ (b) $(x-1)^2(x-2)$
- 6) (a) $\frac{\sqrt{5x}}{x}$ (b) $\frac{\sqrt{x+1}}{x-1}$ (c) $\frac{\sqrt{x-3}-2}{x-7}$
- 7) $x = 22/3$ 8) $x = 1/3$ 9) $x = 3/2, 4$ 10) $x = 0, 2$
- 11) $m = \pm \frac{3}{5}$ 12) $x = 5 \pm 2\sqrt{7}$ 13) $x = \frac{2 \pm \sqrt{2}}{2}$ 14) $x = -1$
- 15) $x = 3$ 16) $x = 12$ 17) $x = \pm\sqrt{2}, \pm\sqrt{5}$ 18) $x = \sqrt[5]{7}$
- 19) $\left[-\frac{5}{4}, \infty\right)$ 20) $[-2, 3)$ 21) $(-\infty, 3) \cup (7, \infty)$
- 22) 15 mph 23) $\frac{6}{5}$ hr = 1 hr 12 min. 24) $y = -6x - 28$ 25) $\sqrt{37}$

26) **Note: Intercepts are not labeled in the graphs below as required.**

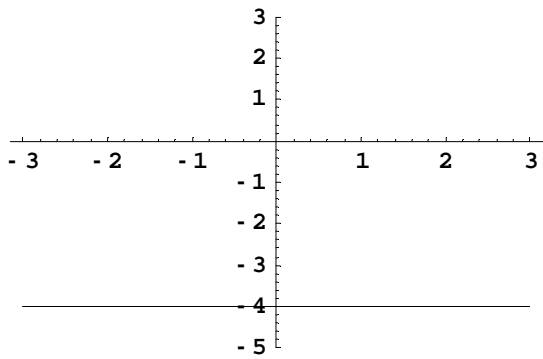
$$y = 2x - 3$$



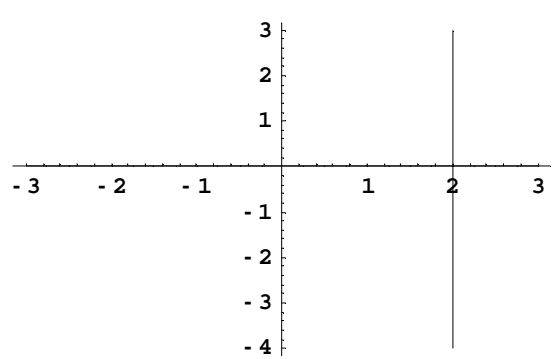
$$y = -2x + 3$$



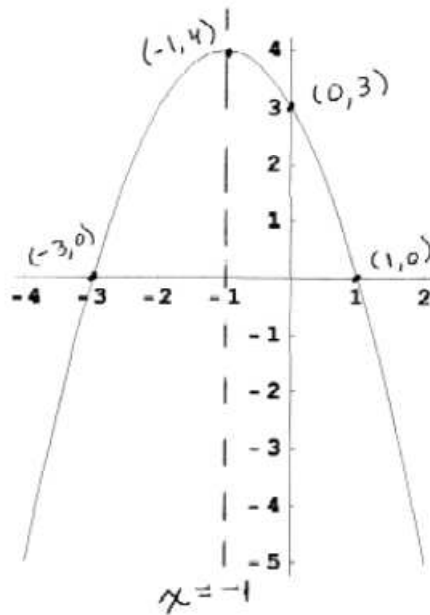
$$y = -4$$



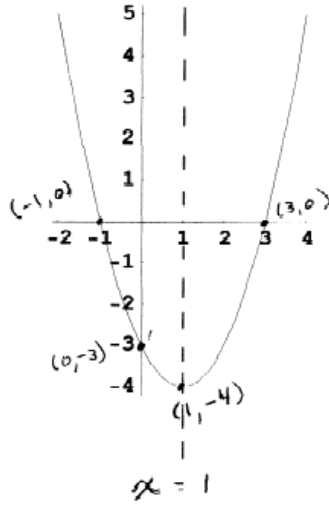
$$x = 2$$



27) Vertex: $(-1, 4)$; Axis of Symmetry: $x = -1$; x-intercepts: $(1, 0)$ and $(-3, 0)$; y-intercept: $(0, 3)$

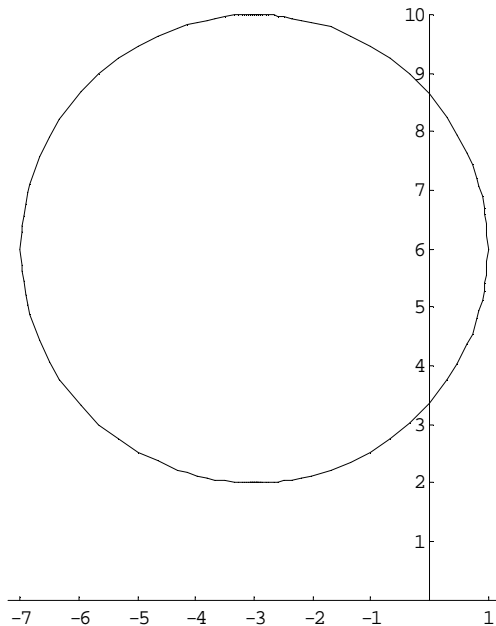


28) Vertex: $(1, -4)$; Axis of Symmetry: $x = 1$; x -intercepts: $(3, 0)$ and $(-1, 0)$; y -intercept: $(0, -3)$



29) (a) $x = -\frac{4}{7}, y = -\frac{19}{7}$ (b) $x = 2, y = 3$

30) $(x+3)^2 + (y-6)^2 = 16$



31) $(x+3)^2 + (y-2)^2 = 36$; Center: $(-3, 2)$; Radius: $r = 6$,

32) $(x-2)^2 + (y-1)^2 = 20$

33) (a) all real numbers except $x = 3$ (b) all real numbers (c) $x \geq 5$ (d) $x > 5$

34) (a) $4a - 3$ (b) 2

35) $(f + g)(x) = x^3 + \frac{1}{x}$, $(f - g)(x) = x^3 - \frac{1}{x}$, $(fg)(x) = x^2$, $(f/g)(x) = x^4$

36) $(f \circ g)(x) = \sqrt{9 - x^2}$; $(g \circ f)(x) = 9 - x$

37) a) $2 \text{ sec} \leq t \leq 5 \text{ sec}$ b) $t = 3.5 \text{ sec}$ and $y = 196 \text{ ft}$