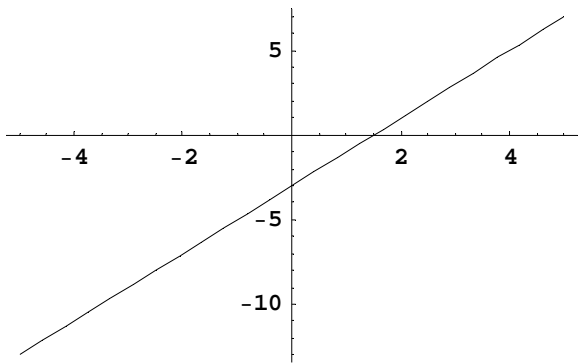


Math 1022 – Beginning of Semester Review Answer Key

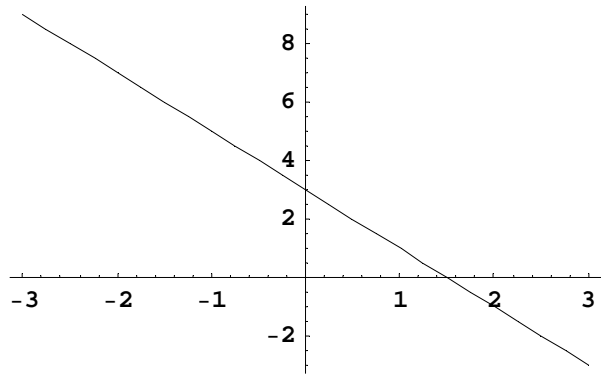
- 1) (a) $\frac{a^6}{4b^4}$ (b) $\frac{y^{12}}{x^6}$ (c) $\frac{2x}{3y^8}$ (d) $\frac{1}{n^4}$ (e) $\frac{x^{12}}{y^8}$
 (f) $9x^2$ (g) $\frac{2x^2}{y}$ (h) $\frac{y}{x^{1/2}}$
- 2) (a) $2x^3 - x^2 + 2x + 4$ (b) $2x^3 - 5x^2 + 6$
 (c) $4x^5 - 4x^4 - 3x^3 + 14x^2 + 4x - 5$ (d) $4x^2 + 12xy + 9y^2$ (e) $4x^2 - 12xy + 9y^2$
 (f) $4x^2 - 9y^2$ (g) $12x^2 - x - 6$ (h) Quotient = $x - 2$; Remainder = $4x + 3$
 (i) Quotient = $3x^2 - 3x + 4$; Remainder = -3
- 3) (a) $2x^2(3x^2 - 4x - 1)$ (b) $(x+1)(5x-3)$ (c) $(x-2y)(2x-3)$
 (d) $(x-1)(x+6)$ (e) $(m-4)(m-2)$ (f) $(x+3)(2x-1)$
 (g) $(5x+4y)(5x-4y)$ (h) $(x+5y)^2$ (i) $(3x-1)^2$ (j) Irreducible
- 4) (a) 1 (b) $\frac{2y^2 - 9y - 6}{(y-2)^2(y+2)}$ (c) $-\frac{1}{x}$ (d) $\frac{2x-1}{x-2}$ (e) 1
- 5) (a) $2|xz|y^2\sqrt{3xy}$ (b) $\frac{2a^2}{3b}\sqrt[3]{a}$
- 6) (a) $\sqrt[3]{m^2}$ or $(\sqrt[3]{m})^2$ (b) $\sqrt[7]{49x^4y^2}$ (c) $x^{3/4}$ (d) $7m^{7/5}$
 (e) $(x+1)^{15/2}$
- 7) (a) $\frac{\sqrt{5x}}{x}$ (b) $\frac{\sqrt{x+1}}{x-1}$ (c) $\frac{\sqrt{x+2}-1}{x+1}$
- 8) $x = 22/3$ 9) $x = 1/3$ 10) $x = 3/2, 4$ 11) $u = 0, 2$
- 12) $x = \pm\frac{3}{5}$ 13) $x = 0, 1, 2$ 14) $x = \sqrt[5]{7}$ 15) $x = 5 \pm 2\sqrt{7}$
- 16) $x = \frac{2 \pm \sqrt{2}}{2}$ 17) $x = -1$ 18) $x = 3$ 19) $x = 29$ (check required)
- 20) $x = 12$ (check required) 21) $x = \pm\sqrt{2}, \pm\sqrt{5}$
- 22) $\left[-\frac{5}{4}, \infty\right)$ 23) $[-2, 3)$ 24) $(-\infty, 3) \cup (7, \infty)$
- 25) $y = -6x - 28$

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

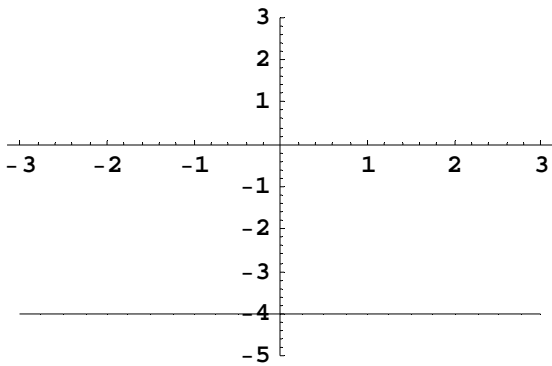
$$y = 2x - 3$$



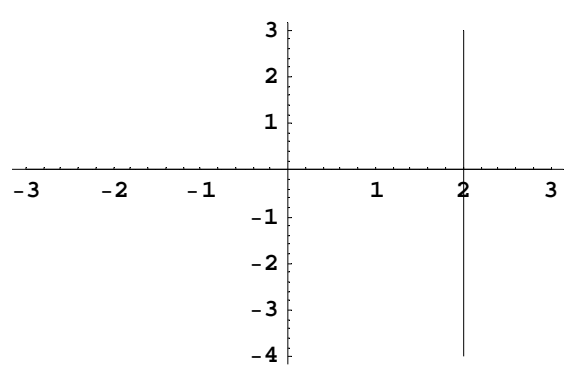
$$y = -2x + 3$$



$$y = -4$$

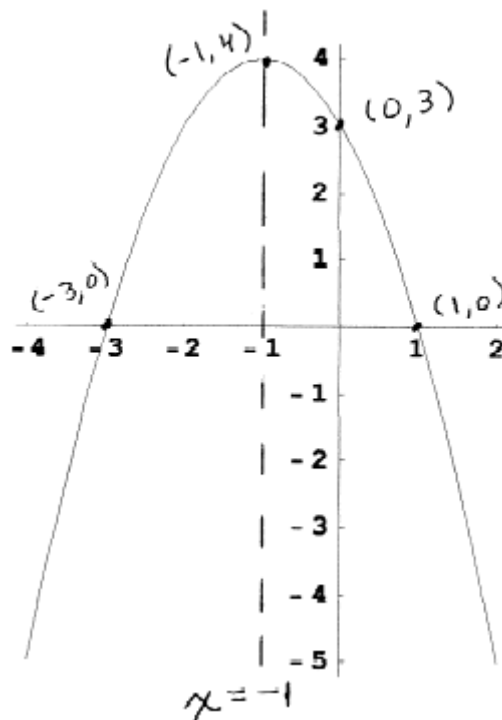


$$x = 2$$

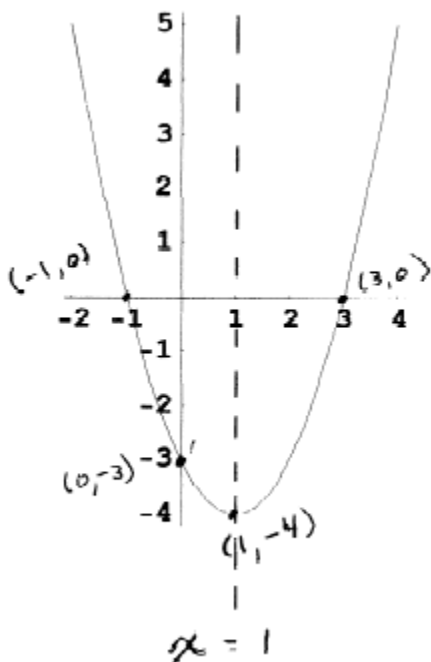


27) $y = -x + 3$

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



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



30) (a) $x = -\frac{4}{7}, y = -\frac{19}{7}$

(b) $x = 2, y = 3$

31) (a) $\left(x - \frac{1}{2}\right)^2 + \frac{7}{4}$

(b) $2(x + 2)^2 - 5$

32) (a) $x = 3, x = -7$

(b) $-7 < x < 3$

(c) $x \leq -7$ or $x \geq 3$