1.
(a). $(x^2 + 1)(2xy - 3)$

(b). $2x(x + 2)(x - 2)$

(c). $(x + 4)(x - 1)$

(d). $(3x - 4)(x - 2)$

(e). $(x^2 + 6)^2$

(f). $(2x + 1)(3x + 4)$

2. $(2x + 1)(4x^2 - 2x + 1)$

3. $(1 + 2x^2)$ i.e. $3x^{1/2} + 6x^{5/2} = 3x^{1/2}(1 + 2x^2)$

4.
(a). $\dfrac{x - 3}{3}$

(b). $\dfrac{1}{(1 - x)(x - 4)}$

(c). $-\dfrac{3}{4}$

(d). $\dfrac{19 + 6x}{12}$

(e). $\dfrac{4x^2 - 3x - 14}{(x + 2)(x - 2)}$

(f). $\dfrac{3b}{16}$

5.
(a). $\dfrac{15y(3 + 4y)}{2(10y + 3)}$

(b). $\dfrac{x - 3}{(x + 1)(x^2 + 1)}$

(c). $\dfrac{1}{\sqrt{y}}$

6. 8

7.
(a). $x = -3$

(b). $x = 0$

(c). $x = -\dfrac{44}{7}$

(d). $x = \dfrac{33}{10}$

8. $y = \dfrac{16}{3} - \dfrac{4}{3}x$

9. $x = \dfrac{586}{12} \approx 48.833 \Longrightarrow 49$ packages.

10. $p = 6811.3636$ pounds per square inch.

11.

(a). $f(3) = 5$ **(b).** $f\left(\dfrac{1}{4}\right) = \dfrac{-13}{4}$ **(c).** $f(2.3) = 2.9$ **(d).** $f(x+h) - f(x) = 3h$

12.

(a). $f(0) = 5$ **(b).** $f(-2) = -3$ **(c).** $f(x-1) = -2x^2 + 4x + 3$ **(d).** $f(x) - f(1) = -2x^2 + 2$

13.

(a). No, it is not a function because it fails the Vertical Line Test   **(b).** Yes, for each x there is only one y-value.

14.

(a). domain: $x \geq -9$; range: $y \geq 0$ **(b).** domain: All real; range: $y \geq 3$ **(c).** domain: All real except $x \neq -\frac{5}{3}$

15.

(a). $\dfrac{x+2}{\sqrt{x}}$ **(b).** $\dfrac{x}{2}$ **(c).** x

16.

(a). $\dfrac{1-3x}{2x}$ **(b).** $\dfrac{1}{2-6x}$ **(c).** $-2 + 9x$

17.

(a). $72 + 48x$

(b). $\$96$

(c). $x = 1.725$ hours