

2) y, x

4) differentiation from first principles

6) no 8) no 10) D

$$12) x^2 - y = 9$$

$$x^2 = 9 + y$$

$$y = x^2 - 9$$

$$x = \sqrt{9 + y}$$

$$= \text{yes}$$

$$14) y = \sqrt{x+5}$$

$$y^2 = x+5$$

$$x = y^2 - 5 = \text{yes}$$

$$16) |y| = 4 - x$$

$$= \text{no}$$

$$18) x - 1 = 0$$

$$= \text{no}$$

$$20) v(r) = \frac{4}{3} \pi r^3$$

$$= (b) v\left(\frac{3}{2}\right)$$

$$22) h(t) = -t^2 + t \dot{t}$$

$$= (a) h(2)$$

$$24) f(x) = \sqrt{x+8} + 2$$

$$(x-2)^2 = x+8$$

$$= a(f)(-8)$$

$$26) q(t) = (2t^2 + 3) |t^2$$

$$= (c) q(-x)$$

$$28) f(x) = |x| + 4$$

$$= a f(2)$$

$$30) f(x) = -3x - 3 \quad x < -1$$

$$x^2 + 2x - 1 \quad x > -1$$

$$= (b) f(-1)$$

$$32) \begin{vmatrix} -5 & -4 & -3 & -2 & -1 \\ -1 & -\frac{1}{2} & 0 & \frac{1}{2} & 1 \end{vmatrix}$$

$$34) \begin{vmatrix} 1 & 2 & 3 & 4 & 5 \\ -2 & -1 & 0 & 1 & 2 \end{vmatrix}$$

$$36) f(x) = 4x + 6$$

$$4x + 6 = 0$$

$$4x = -6$$

$$x = -\frac{6}{4}$$

$$x = -\frac{3}{2}$$

$$38) f(x) = \frac{12 - x^2}{8}$$

$$12 - x^2 = 0$$

$$x^2 = 12$$

$$x = \pm \sqrt{12}$$

$$40) x^2 - 6x - 16 = f(x)$$

$$x^2 - 6x - 16 = 0$$

$$x = 8 \text{ or } x = -2$$

$$42) x^3 - x^2 - 3x + 3 = f(x)$$

$$x^3 - x^2 - 3x + 3 = 0$$

$$x = -1.73 \text{ or } x = 1.73$$

$$44) f(x) = g(x)$$

$$x^2 + 2x + 1 = 5x + 19$$

$$x^2 - 3x - 18 = 0$$

$$x = 6 \text{ or } x = -3$$

$$46) f(x) = g(x)$$

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

$$\sqrt{x} = 6 - x$$

$$x = (-x + 6)^2$$

$$-x^2 - 12x + 36 = x$$

$$-x^2 - 13x + 36 = 0$$

$$x^2 + 13x - 36 = 0$$

$$x = 2.345 \text{ or } x = -15.3$$

$$48) g(x) = 1 - 2x^2$$

$$g(0) = 1 - 2x^2$$

$$-2x^2 = -1$$

$$x^2 = \frac{1}{2}$$

$$x = \pm \sqrt{\frac{1}{2}}$$

$$50) f(t) = \sqrt[3]{tt^4}$$

$$0 = t + 4$$

$$t = -4$$

$$52) h(x) = \frac{6}{x^2 + 4x}$$

$$x = \frac{6}{x^2 + 4x}$$

$$x^3 - 4x^2 = 6$$

$$x^3 - 4x^2 - 6 = 0$$

$$x = 4.32 \text{ or } x = -0.16$$

$$54) f(x) = \frac{\sqrt{x+6}}{6+x}$$

$$x(x+6) = \sqrt{x+6}$$

$$x^2 + 6x = \sqrt{x+6}$$

$$(x^2 + 6x)^2 = x + 6$$

$$56) \frac{x+2}{\sqrt{x-10}}$$

$$(x+2)^2 = x(x-10)$$

$$x^2 + 4x + 4 = x^2 - 10x$$

$$14x = 4$$

$$x = \frac{4}{14}$$

$$x = \frac{2}{7}$$