

SOLUTIONS

ALGEBRA REVISION TERM 3

①

Q1: Solve equations

(a)(i)

$$17x + 5 = 4x - 3$$

$$17x - 4x = -3 - 5$$

$$13x = -8$$

$$x = -8/13$$

(ii) $x^4 = 81$ $x^2 = 9$, $x = \pm 3$

(b) Solve $3x^2 - 5x + 2 = 0$

$$3x^2 - 3x - 2x + 2 = 0 \Rightarrow 3x(x-1) - 2(x-1)$$

$(3x-2)(x-1)$
 $x = \frac{2}{3}$
 $x = 1$

(c)(i) Factorise $x^2 + x - 20$

$$(x+5)(x-4)$$

-20
 $+10-2$
 $5-4$

(ii) simplify $\frac{x^2 + 8x + 15}{x^2 + 3x} = \frac{(x+5)(x+3)}{x(x+3)} = \frac{x+5}{x}$

Q2

(a) $V = 3\pi\sqrt{mk}$

(i) If $m = 4$ and $k = 16$, find V in terms of π

$$V = 3\pi \times \sqrt{4 \times 16} = 3\pi \times \sqrt{64} = 3\pi \times 8 = 24\pi$$

(ii) Rewrite the formula with m as the subject
i.e. $m = \dots$

$$3\pi\sqrt{mk} = V$$

$$\sqrt{mk} = \frac{V}{3\pi}$$

$$mk = \left(\frac{V}{3\pi}\right)^2$$

$$m = \frac{\left(\frac{V}{3\pi}\right)^2}{k}$$

$$= \frac{V^2}{9k\pi^2}$$

(b)(i) Expand $-5x(1-x)$

$$-5x + 5x^2$$

(ii) solve $\frac{7x-1}{5} = 4$

$$7x - 1 = 20$$

$$7x = 21$$

$$x = 21/7 = 3$$

Q3

(a) Solve $2x(x+7) = 0$ $x = 0$ or $x = -7$

(b) simplify $\frac{7x^8}{21x^5} = \frac{1}{3}x^3 = \frac{x^3}{3}$

Q4

1) Expand and factorise

(i) Expand and simplify $(x+6)(4x-1)$

$$4x^2 - x + 24x - 6$$

$$4x^2 + 23x - 6$$