

Relationships Extended Test 3

1. $(0, 2) (1, -1)$

$$m = \frac{-1-2}{1-0} = \frac{-3}{1} = -3$$

$$y-b = m(x-a)$$

$$y-2 = -3(x-0)$$

$$y-2 = -3x$$

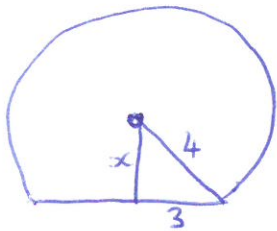
$$y = -3x + 2$$

2. $\angle ACB = 90 - 54 = 36^\circ$

$$\angle ABC = 90^\circ$$

$$\angle CAB = 180 - 90 - 36 = 54^\circ$$

3.



$$\begin{aligned}x^2 &= 4^2 - 3^2 \\&= 7 \\x &= \sqrt{7} \\&= 2.6\text{cm}\end{aligned}$$

$$h = 3 + 2.6 + 4 = 9.6\text{cm}$$

4. a) $F + S = 15$

b) $40F + 54S = 768$

c) $40F + 40S = 600$

$$14S = 168$$

$$S = 12$$

$$F = 15 - 12 = 3$$

$$5. k = \frac{1}{2}mv^2$$

$$2k = mv^2$$

$$v^2 = \frac{2k}{m}$$

$$v = \sqrt{\frac{2k}{m}}$$

$$6. a = 3$$

$$b = 5$$

$$c = -7$$

$$x = \frac{-5 \pm \sqrt{109}}{2 \times 3}$$

$$x = \frac{-5 \pm \sqrt{109}}{6}$$

$$\begin{aligned} b^2 - 4ac &= 5^2 - 4 \times 3 \times -7 \\ &= 25 + 84 \\ &= 109 \end{aligned}$$

$$x = \frac{-5 + \sqrt{109}}{6}$$

$$x = \frac{-5 - \sqrt{109}}{6}$$

$$= 0.9067$$

$$x = -2.573$$

$$= 0.9$$

$$x = -2.6$$

$$7. a = -3$$

$$b = 2$$

$$8. 15 \sin x = -7$$

$$\sin x = \frac{-7}{15}$$

$$\text{useable} = \sin^{-1}\left(\frac{7}{15}\right) = 28^\circ$$

$$x = 180 + 28 = 208^\circ$$

$$x = 360 - 28 = 332^\circ$$

S	A
T	C

180+ 360-

$$9. \sin^2 x + \cos^2 x = 1$$

$$\sin^2 x = 1 - \cos^2 x$$

$$\frac{\sin^2 x}{\sin x} = \underline{\underline{\sin x}}$$

$$10. \tan x = \sin x \div \cos x$$

$$= \frac{1}{5} \div \frac{2\sqrt{6}}{5}$$

$$= \frac{1}{5} \times \frac{5}{2\sqrt{6}}$$

$$= \frac{1}{2\sqrt{6}}$$

$$\frac{1}{2\sqrt{6}} \times \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{6}}{2 \times 6} = \frac{\sqrt{6}}{12}$$

11. a) $y = (x-2)^2 + 5$

b) $x = 6$

c)

