10.5) Harder trigonometric equations

Worked example

Solve in the interval $0 \leq x \leq 360°$:

$$\sin 3x = \frac{1}{2}$$

$$\tan 4x = -\sqrt{3}$$

Your turn

Solve in the interval $0 \leq x \leq 360°$:

$$\cos 3x = -\frac{1}{2}$$

$x = 40°, 80°, 160°, 200°, 280°, 320°$

Worked example

Solve in the interval $0 \leq x \leq 360°$:

$$4 \sin 3x = 5 \cos 3x$$

Your turn

Solve in the interval $0 \leq x \leq 360°$:

$$2 \sin 2x = \cos 2x$$

$x = 13.3°, 103.3°, 193.3°, 283.3°$ (1 dp)

Worked example

Solve in the interval $0 \leq x \leq 360°$:

$$\cos(x + 30°) = 0.6$$

Your turn

Solve in the interval $0 \leq x \leq 360°$:

$$\sin(x + 60°) = 0.3$$

$x = 102.5°, 317.5°$ (1 dp)

Worked example

Solve in the interval $0 \leq x \leq 360°$:

$$\sin(4x + 60°) = \frac{1}{2}$$

Your turn

Solve in the interval $0 \leq x \leq 360°$:

$$\sin(2x + 30°) = \frac{\sqrt{2}}{2}$$

$x = 7.5°, 52.5°, 187.5°, 232.5°$ (1 dp)

Worked example

Solve in the interval $0 \leq x < 180°$:

$$\cos(2x - 50°) = -0.3$$

Your turn

Solve in the interval $0 \leq x < 180°$:

$$\cos(3x - 10°) = -0.4$$

$x = 41.2°, 85.5°, 161.2°$ (1 dp)