TRIGONOMETRY — *Answers*

1 **a** 0.755 **b** −0.354 **c** 0.530 **d** −0.255

2 **a** $= \frac{1}{2}$ **b** $= \frac{1}{\sqrt{2}}$ **c** $= 1$ **d** $= \frac{\sqrt{3}}{2}$

e $= 1$ **f** $= \frac{1}{\sqrt{3}}$ **g** $= -\cos 60° = -\frac{1}{2}$ **h** $= \sin 45° = \frac{1}{\sqrt{2}}$

i $= \tan 30° = \frac{1}{\sqrt{3}}$ **j** $= -\cos 45° = -\frac{1}{\sqrt{2}}$ **k** $= -\sin 60° = -\frac{\sqrt{3}}{2}$ **l** $= -\tan 60° = -\sqrt{3}$

m $= \cos 30° = \frac{\sqrt{3}}{2}$ **n** $= -\tan 30° = -\frac{1}{\sqrt{3}}$ **o** $= \cos 60° = \frac{1}{2}$ **p** $= \sin 45° = \frac{1}{\sqrt{2}}$

q $= -\tan 45° = -1$ **r** $= \sin 60° = \frac{\sqrt{3}}{2}$ **s** $= \tan 30° = \frac{1}{\sqrt{3}}$ **t** $= -\cos 30° = -\frac{\sqrt{3}}{2}$

3 **a** 0.913 **b** −0.851 **c** 0.042 **d** 0.252

4 **a** $= \frac{1}{2}$ **b** $= 0$ **c** $= \frac{1}{\sqrt{2}}$ **d** $= \sqrt{3}$

e $= \frac{1}{2}$ **f** $= \sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$ **g** $= -\tan \frac{\pi}{4} = -1$ **h** $= -\cos \frac{\pi}{6} = -\frac{\sqrt{3}}{2}$

i $= -\tan \frac{\pi}{3} = -\sqrt{3}$ **j** $= -\cos \frac{\pi}{4} = -\frac{1}{\sqrt{2}}$ **k** $= -\sin \frac{\pi}{6} = -\frac{1}{2}$ **l** $= \tan \frac{\pi}{6} = \frac{1}{\sqrt{3}}$

m $= \sin 0 = 0$ **n** $= -\tan \frac{\pi}{4} = -1$ **o** $= -\cos \frac{\pi}{3} = -\frac{1}{2}$ **p** $= -\sin \frac{\pi}{3} = -\frac{\sqrt{3}}{2}$

5 **a** (0, 0), (180, 0), (360, 0), (540, 0), (720, 0)

b (90, 1), (270, −1), (450, 1), (630, −1)

6 **a** (0, 0), (180, 0), (360, 0), (540, 0), (720, 0)

b $x = 90$, $x = 270$, $x = 450$, $x = 630$

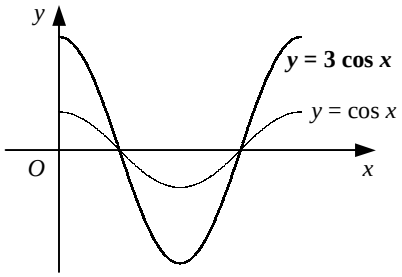
7 **a** stretch by a factor of 3 in the y-direction about the x-axis

b stretch by a factor of $\frac{1}{4}$ in the x-direction about the y-axis

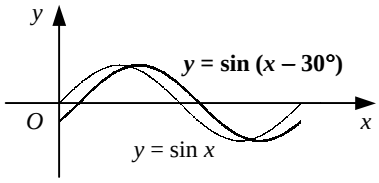
c translation by 60 units in the negative x-direction

d reflection in the y-axis

8 **a**



b



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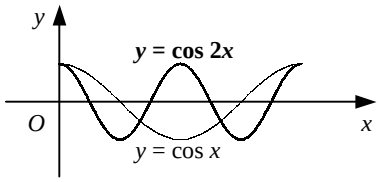

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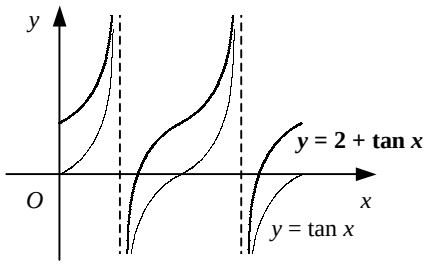

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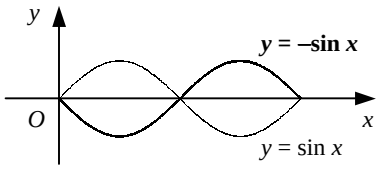

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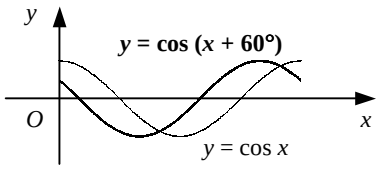

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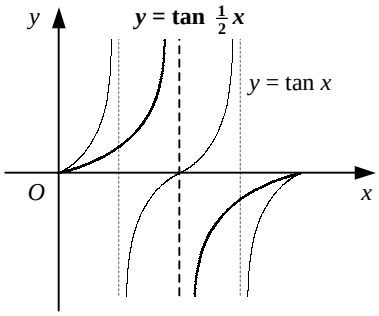

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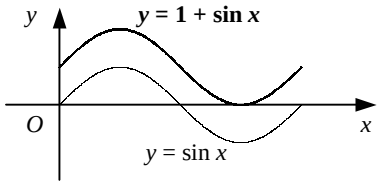


9 **a** (–90°, –2), (90°, 2)

b (–180°, 1), (0, 3), (180°, 1)

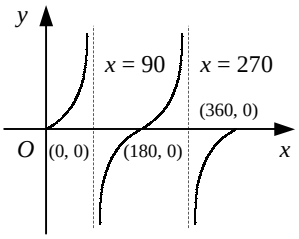
c (–150°, –1), (–90°, 1), (–30°, –1), (30°, 1), (90°, –1), (150°, 1)

d (–135°, –1), (45°, 1)

10 **a** 360° **b** 180° **c** 360°

d 180° **e** 180° **f** 1080°

11 **a**



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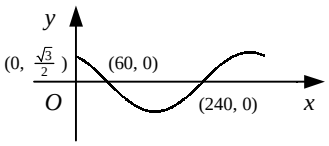

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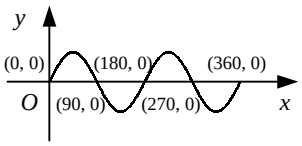

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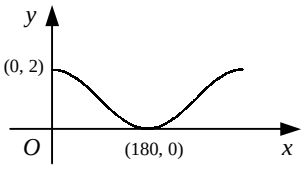

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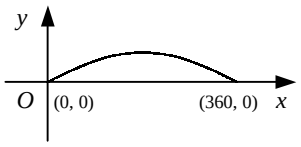

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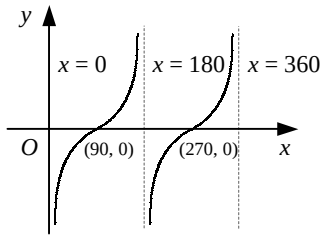

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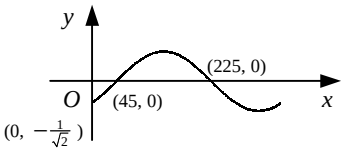

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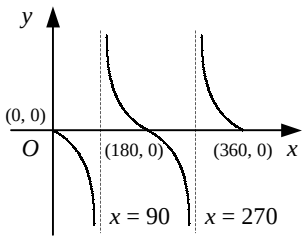
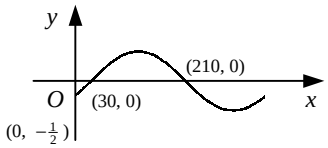
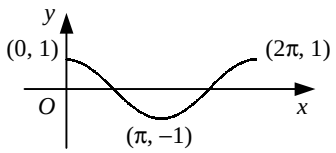


i



12 **a**



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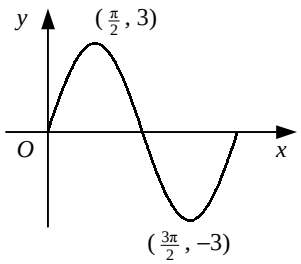

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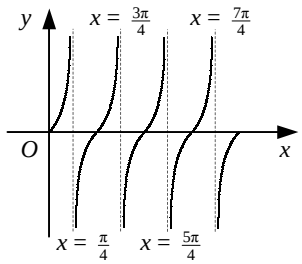

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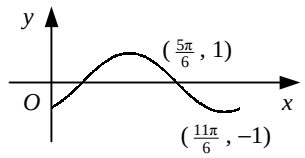

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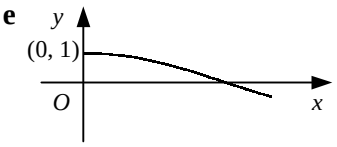

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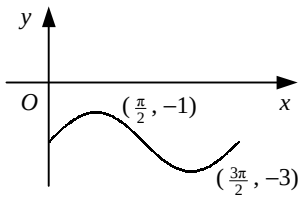

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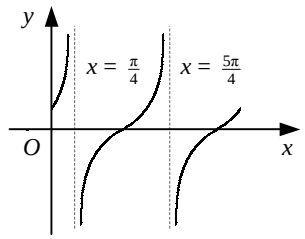

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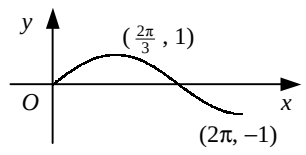

i