Answers

Essential Skills 13	
1	$x = 30°, 90°, 150°, 270°$
2	$x = 0°, 180°, 360°$
3	$x = 60°, 180°, 300°$
4	$x = 90°$
5	$x = 48.2°, 120°, 240°, 311.8°$
6	$x = 41.4°, 180°, 318.6°$
7	$x = \dfrac{\pi}{6}, \dfrac{\pi}{2}, \dfrac{5\pi}{6}$
8	$x = \dfrac{\pi}{6}, \dfrac{5\pi}{6}, 3.34, 6.08$
9	$x = 0, \dfrac{2\pi}{3}, \dfrac{4\pi}{3}, 2\pi$
10	$x = \dfrac{\pi}{3}, \dfrac{2\pi}{3}, \dfrac{4\pi}{3}, \dfrac{5\pi}{3}$
AQ	(i) $y = \cos 2x$ (ii) $y = 1 - 3\cos x$ (iii) $(60°, -\frac{1}{2})$ & $(300°, -\frac{1}{2})$

Essential Skills 14	
1	$(x - 1)(x + 1)(x + 4)$
2	$(x + 2)^2(x - 2)$
3	$(x + 1)(x - 3)(x + 2)$
4	$(x - 1)(x - 4)(x + 3)$
5	$(x + 3)(x + 1)(x + 2)$
6	$(x - 2)(2x - 1)(x + 1)$
7	$(x + 1)^2(x - 3)$
8	$x = -1, x = \dfrac{1}{2}, x = -3$
9	$x = 1, x = -\dfrac{1}{3}, x = -1$
10	$x = 2, x = -3$
AQ	(1) $p = 11$ (2) (1, 3), (-10, -250), (3, -3)

Essential Skills 15	
1	5
2	-9
3	No limit
4	10
5	$\dfrac{20}{3}$
6	No limit
7	6
8	30
9	9
10	-3
AQ	(a) 3 doses (b) $U_{n+1} = 0.6U_n + 100$ (c) $L = 250$, safe

Essential Skills 16	
1	$5\cos(x - 37)°$
2	$13\sin(x + 67)°$
3	$\sqrt{14}\cos(x + 68)°$
4	$\sqrt{2}\sin(x - 45)°$
5	$\sqrt{6}\cos(x - 55)°$
6	$\sqrt{14}\sin(x + 37)°$
7	$\sqrt{5}\cos(x + 333)°$
8	$\sqrt{13}\sin(x + 326)°$
9	$\sqrt{10}\sin(x + 18)°$
10	$10\cos(x + 323)°$
AQ	(1) $3\sin(x + 48)°$ min -1 @ 222° (2) (a) $5\cos(x + 0.64)$ (b) $x = 1.57, 3.43$