

## Answers

Essential Skills 21	
1	-7
2	-2
3	17
4	4
5	36
6	3
7	6
8	$\frac{\sqrt{2}}{2}$
9	0
10	-9
AQ	(1) $\frac{9+15\sqrt{3}}{2}$ (2) $m = 13$

Essential Skills 22	
1	$\frac{dy}{dx} = 4(x+5)^3$
2	$f'(x) = 6(2x-1)^2$
3	$f'(x) = 9(3x+2)^2$
4	$\frac{dy}{dx} = 5(4x-1)^{\frac{1}{4}}$
5	$f'(x) = -\frac{9}{(x+1)^4}$
6	$\frac{dy}{dx} = \frac{1}{\sqrt{2x-1}}$
7	$\frac{dy}{dx} = 3(4x+1)(2x^2+x)^2$
8	$f'(x) = 4\cos 4x$
9	$\frac{dy}{dx} = 2\sin(2x - \frac{\pi}{3})$
10	$\frac{dy}{dx} = -6\sin x \cos^2 x$
AQ	(1) Proof, $\sqrt{3}$ (2) $5y + 4x - 9 = 0$

Essential Skills 23	
1	$(2x+1)^4 + c$
2	$\frac{1}{5}(x-1)^5 + c$
3	$-\frac{1}{8}(3-2x)^4 + c$
4	$\frac{1}{4}(3x+1)^{\frac{4}{3}} + c$
5	$-\frac{1}{2(4x+1)} + c$
6	$-2\sqrt{9-x} + c$
7	$\frac{2}{9}(3x-2)^{\frac{3}{2}} + c$
8	$-\frac{1}{2}\cos 2x + c$
9	$\sin 3x + \cos 2x + c$
10	$\frac{1}{4}\sin(5x - \frac{\pi}{4}) + c$
AQ	(1)(a) $x = \frac{\pi}{6}, \frac{5\pi}{6}$ (b) $\frac{3\sqrt{3}}{2}$ (2) (a) Proof (b) $\frac{3}{4}\sin 2x + \frac{3}{2}x + c$

Essential Skills 24	
1	$a = 2, b = -3$
2	$a = 1, b = 7$
3	$a = 0.2, b = 8$
4	$a = \frac{2}{3}, b = 11$
5	$a = 0.1, b = -25$
6	$a = -3, b = 4$
7	$a = 4$
8	$a = -2, b = 4$
9	$a = 0.8, b = 6$
10	$a = 2, b = 3$
AQ	(a) Interest 4% per month, repayment £25 (b) December 1 <sup>st</sup> , £20.90