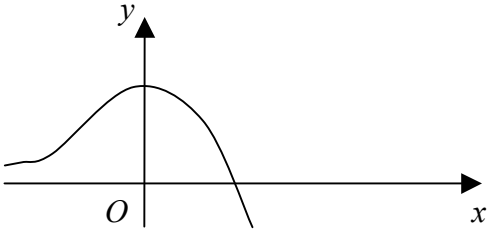
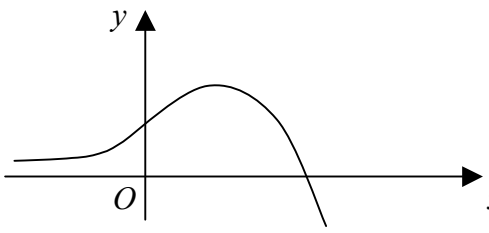
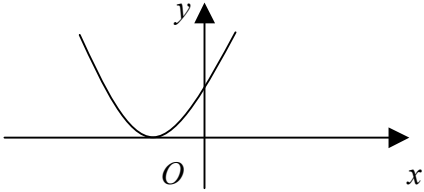


EDEXCEL PURE MATHEMATICS C1 (6663) SPECIMEN PAPER MARK SCHEME

Question number	Scheme	Marks
1.	$a = 7, d = 2$ $S_{20} = \frac{1}{2} \times 20 \times (2 \times 7 + 19 \times 2) = 520$	B1 M1 A1 (3 marks)
2.	$\int (5x + 3\sqrt{x}) dx = \frac{5x^2}{2} + 2x^{\frac{3}{2}} + C$	M1 A1 A1 B1 (4 marks)
3. (a) (b)	$\sqrt{80} = 4\sqrt{5}$ $(4 - \sqrt{5})^2 = 16 - 8\sqrt{5} + 5 = 21 - 8\sqrt{5}$	B1 (1) M1 A1 A1 (3) (4 marks)
4.	$\text{Gradient of } AB = \frac{4 - (-6)}{3 - 7} \left(= -\frac{5}{2} \right)$ $\text{Gradient of } l = \frac{2}{5}$ $y - 4 = \frac{2}{5}(x - 3) \qquad 2x - 5y + 14 = 0$	M1 A1 M1 M1 A1 (5) (5 marks)
5. (a) (b)	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  </div> <div style="width: 45%;"> <p>Position, Shape</p> <p>(0, 2), (2, 0)</p> </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">  </div> <div style="width: 45%;"> <p>Position, Shape</p> <p>(0, 1), $(\frac{1}{2}, 2)$, $(\frac{3}{2}, 0)$</p> </div> </div>	B1 B1 B1 (3) B1 B2 (1, 0) (3) (6 marks)

EDEXCEL PURE MATHEMATICS C1 (6663) SPECIMEN PAPER MARK SCHEME

Question number	Scheme	Marks
<p>6. (a)</p> <p>(b)</p>	$5 - 2x = 2x^2 - 3x - 16$ $(2x - 7)(x + 3) = 0$ <p>Using critical values $x = -3,$</p> $x < -3,$ $2x^2 - x - 21 = 0$ $x = -3, x = \frac{7}{2}$ $y = 11, y = -2$ $x = \frac{7}{2}$ $x > \frac{7}{2}$	<p>M1 A1</p> <p>M1 A1</p> <p>M1 A1ft (6)</p> <p>M1</p> <p>M1 A1ft (3)</p> <p>(9 marks)</p>
<p>7. (a)</p> <p>(b)</p> <p>(c)</p> <p>Solve for A: $A = 155$</p>	$a + (n - 1)d = 250 + (10 \times 50) = \text{£}750$ $\frac{1}{2}n [2a + (n - 1)d] = \frac{1}{2} \times 20 \times (500 + 19 \times 50), = \text{£}14500$ $B: \frac{1}{2} \times 20 \times (2A + 19 \times 60) [= 10(2A + 1140)], = \text{“}14500\text{”}$	<p>M1 A1 (2)</p> <p>M1 A1, A1 (3)</p> <p>B1, M1</p> <p>M1 A1 (4)</p> <p>(9 marks)</p>
<p>8. (a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p>	$a = 5, \quad (x + 5)^2 - 25 + 36 \quad b = 11$ $b^2 - 4ac = 100 - 144, < 0, \text{ therefore no real roots}$ <p>Equal roots if $b^2 - 4ac = 0$ $4k = 100$ $k = 25$</p>  <p>Shape, position</p> <p>$(-5, 0) (0, 25)$</p>	<p>B1, M1 A1 (3)</p> <p>M1 A1 (2)</p> <p>M1 A1 (2)</p> <p>B1 B1</p> <p>B1 B1ft (4)</p> <p>(11 marks)</p>

EDEXCEL PURE MATHEMATICS C1 (6663) SPECIMEN PAPER MARK SCHEME

Question number	Scheme	Marks
<p>9. (a)</p> <p>(b)</p> <p>(c)</p>	$f(x) = x^3 - 4x^2 + 6x + C$ $5 = 27 - 36 + 18 + C \quad C = -4$ $x = 2: \quad y = 8 - 16 + 12 - 4 = 0$ $f'(3) = 27 - 24 + 6 = 9, \quad \text{Parallel therefore equal gradient}$ $3x^2 - 8x + 6 = 9 \quad 3x^2 - 8x - 3 = 0$ $(3x + 1)(x - 3) = 0 \quad Q: x = -\frac{1}{3}$	<p>M1 A1</p> <p>M1 A1 (4)</p> <p>M1 A1 (2)</p> <p>B1, M1</p> <p>M1</p> <p>M1 A1 (5)</p> <p>(11 marks)</p>
<p>10. (a)</p> <p>(b)</p> <p>(c)</p>	$\frac{dy}{dx} = 3x^2 - 5 - 2x^{-2}$ <p>At both A and B, $\frac{dy}{dx} = 3 \times 1 - 5 - \frac{2}{1} \quad (= -4)$</p> <p>Gradient of normal $= \frac{1}{4}$</p> $y - (-2) = \frac{1}{4}(x - 1) \quad 4y = x - 9$ <p>Normal at A meets y-axis where $x = 0$: $y = -\frac{9}{4}$</p> <p>Similarly for normal at B: $4y = x + 9 \quad y = \frac{9}{4}$</p> $\text{Length of } PQ = \frac{9}{4} + \frac{9}{4} = \frac{9}{2}$	<p>M1 A2(1,0)</p> <p>M1 A1 (5)</p> <p>M1 A1ft</p> <p>M1 A1 (4)</p> <p>B1</p> <p>M1 A1</p> <p>A1 (4)</p> <p>(13 marks)</p>