

Tracking Test 1 – October – Remedial Action

Answer the questions that you got wrong in the Tracking Test.
Make sure you do ALL FOUR questions each time(A,B,C and D)

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1. A) Find the value of $49^{-\frac{1}{2}}$
B) Find the value of $64^{-\frac{1}{2}}$
C) Find the value of $8^{-\frac{1}{3}}$
D) Find the value of $81^{-\frac{1}{4}}$
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2. A) Express $\sqrt{27} + \sqrt{75}$ in the form $a\sqrt{b}$, where a and b are integers to be found
B) Express $\sqrt{32} + \sqrt{50}$ in the form $a\sqrt{b}$, where a and b are integers to be found
C) Express $\sqrt{20} + \sqrt{80}$ in the form $a\sqrt{b}$, where a and b are integers to be found
D) Express $\sqrt{108} + \sqrt{48}$ in the form $a\sqrt{b}$, where a and b are integers to be found
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3. Write in the form αx^n :

- A) (a) $\frac{3}{5x^2}$, (b) $\frac{4x}{\sqrt{x}}$.
B) (a) $\frac{2}{7x^3}$, (b) $\frac{5x}{\sqrt{x}}$
C) (a) $\frac{7}{x^5}$, (b) $\frac{11x}{\sqrt{x}}$
D) (a) $\frac{12}{13x^9}$, (b) $\frac{23x}{\sqrt{x}}$
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4. A) Solve the equation $\frac{5-x}{4} - \frac{3x-2}{6} = 0$.
B) Solve the equation $\frac{5-3x}{2} - \frac{x-2}{7} = 0$.
C) Solve the equation $\frac{12-2x}{4} - \frac{7x-1}{3} = 0$.
D) Solve the equation $\frac{5-2x}{4} - \frac{9x+2}{3} = 0$.
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5. A) Factorise the expressions: (a) $4x^2 - 7x - 2$ (b) $9x^2 - 49$.
B) Factorise the expressions: (a) $3x^2 + x - 2$ (b) $16x^2 - 81$
C) Factorise the expressions (a) $2x^2 - 5x - 3$ (b) $4x^2 - 1$
D) Factorise the expressions (a) $21x^2 - 37x - 28$ (b) $100x^2 - 81$
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6. (A)

- (a) Express $x^2 + 10x - 4$ in the form $(x + a)^2 + b$, where a and b are constants.
(b) Solve the equation $x^2 + 10x - 4 = 0$.
(c) Sketch the curve with equation $y = x^2 + 10x - 4$, giving the coordinates of
(i) the point where it meets the y-axis
(ii) the points where it crosses the x-axis
and (iii) its minimum point

(B)

- (a) Express $x^2 + 6x - 9$ in the form $(x + a)^2 + b$, where a and b are constants.
(b) Solve the equation $x^2 + 6x - 9 = 0$.
(c) Sketch the curve with equation $y = x^2 + 6x - 9$, giving the coordinates of
(i) the point where it meets the y-axis
(ii) the points where it crosses the x-axis
and (iii) its minimum point

(C)

- (a) Express $x^2 + 12x - 7$ in the form $(x + a)^2 + b$, where a and b are constants.
(b) Solve the equation $x^2 + 12x - 7 = 0$.
(c) Sketch the curve with equation $y = x^2 + 12x - 7$, giving the coordinates of
(i) the point where it meets the y-axis
(ii) the points where it crosses the x-axis
and (iii) its minimum point

(D)

- (a) Express $x^2 + 18x - 1$ in the form $(x + a)^2 + b$, where a and b are constants.
(b) Solve the equation $x^2 + 18x - 1 = 0$.
(c) Sketch the curve with equation $y = x^2 + 18x - 1$, giving the coordinates of
(i) the point where it meets the y-axis
(ii) the points where it crosses the x-axis
and (iii) its minimum point
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7. (A) Solve the simultaneous equations $x + y = 4$; $x^2 + 3y = 22$

(B) Solve the simultaneous equations $x + y = 8$; $x^2 + 2y = 19$

(C) Solve the simultaneous equations $x + y = -1$; $x^2 - 3y = 1$

(D) Solve the simultaneous equations $x - y = 21$; $x^2 + 3y = 67$

8. (A)

- (a) A line passes through the points A (5, -1) and B (7, 3). Find the equation of the line in the form $ax + by + c = 0$.
- (b) Give the gradient of a line perpendicular to the line AB.

(B)

- (a) A line passes through the points A (2, -3) and B (5, 1). Find the equation of the line in the form $ax + by + c = 0$.
- (b) Give the gradient of a line perpendicular to the line AB.

(C)

- (a) A line passes through the points A (-5, 1) and B (-7, -3). Find the equation of the line in the form $ax + by + c = 0$.
- (b) Give the gradient of a line perpendicular to the line AB.

(D)

- (a) A line passes through the points A (0,0) and B (1, 1). Find the equation of the line in the form $ax + by + c = 0$.
- (b) Give the gradient of a line perpendicular to the line AB.
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9.

- (A) Solve the equation $x^2 - 6x + 4 = 0$, giving your answers in the form $p \pm \sqrt{q}$, where p and q are integers.
- (B) Solve the equation $x^2 - 8x - 2 = 0$, giving your answers in the form $p \pm \sqrt{q}$, where p and q are integers.
- (C) Solve the equation $x^2 + 6x + 1 = 0$, giving your answers in the form $p \pm \sqrt{q}$, where p and q are integers.
- (D) Solve the equation $x^2 - 12x - 7 = 0$, giving your answers in the form $p \pm \sqrt{q}$, where p and q are integers.
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10. Sketch the following curves, clearly showing where the curves cross the axis and any asymptotes.

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|----------------------------|-------------------------|---------------------|
| (A) (a) $y = (x+1)^2(x+2)$ | (b) $y = \frac{1}{x-3}$ | (c) $y = x^3 - 8$ |
| (B) (a) $y = (x-1)^2(x-3)$ | (b) $y = \frac{1}{x+1}$ | (c) $y = x^3 - 1$ |
| (C) (a) $y = (x+3)^2(x+4)$ | (b) $y = \frac{1}{x+2}$ | (c) $y = x^3 - 64$ |
| (D) (a) $y = (x-8)^2(x-1)$ | (b) $y = \frac{1}{x-1}$ | (c) $y = x^3 - 125$ |
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11.

- (A) Given that the equation $kx^2 - 20x + k = 0$, has real roots, find the set of values for k .
- (B) Given that the equation $kx^2 - 10x + k = 0$, has real roots, find the set of values for k .
- (C) Given that the equation $kx^2 + 20x + k = 0$, has real roots, find the set of values for k .
- (D) Given that the equation $kx^2 + x + k = 0$, has real roots, find the set of values for k .
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If you feel any of the answers are wrong, please email m.macve@bhasvic.ac.uk

TRACKING TEST 1
REMEDIAL ACTION

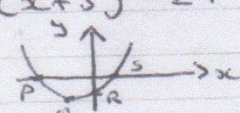
1 A) $\frac{1}{7}$ B) $\frac{1}{8}$ C) $\frac{1}{2}$ D) $\frac{1}{3}$

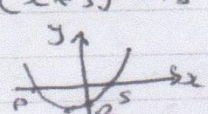
2 A) $8\sqrt{3}$ B) $9\sqrt{2}$ C) $6\sqrt{5}$ D) $10\sqrt{3}$

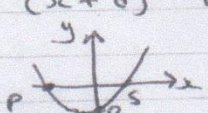
3 A) a) $\frac{3}{5}x^{-2}$ b) $4x^{1/2}$ B) a) $\frac{2}{7}x^{-3}$ b) $5x^{1/2}$
C) a) $7x^{-5}$ b) $11x^{1/2}$ D) a) $\frac{12}{13}x^{-9}$ b) $23x^{1/2}$

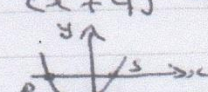
4 A) $\frac{19}{9}$ B) $\frac{39}{23}$ C) $\frac{20}{17}$ D) $\frac{7}{42}$

5 a) A) $(4x+1)(x-2)$ B) $(3x-2)(x+1)$
C) $(2x+1)(x-3)$ D) $(7x+4)(3x-7)$
b) A) $(3x-7)(3x+7)$ B) $(4x-9)(4x+9)$
C) $(2x-1)(2x+1)$ D) $(10x-9)(10x+9)$

6 A) a) $(x+5)^2 - 29$ b) $x = -5 \pm \sqrt{29}$
c)  P $(-5 - \sqrt{29}, 0)$ Q $(-5, -29)$
R $(0, -4)$ S $(-5 + \sqrt{29}, 0)$

B) a) $(x+3)^2 - 18$ b) $x = -3 \pm \sqrt{18}$ (or $-3 \pm 3\sqrt{2}$)
c)  P $(-3 - \sqrt{18}, 0)$ Q $(-3, -18)$
R $(0, -9)$ S $(-3 + \sqrt{18}, 0)$

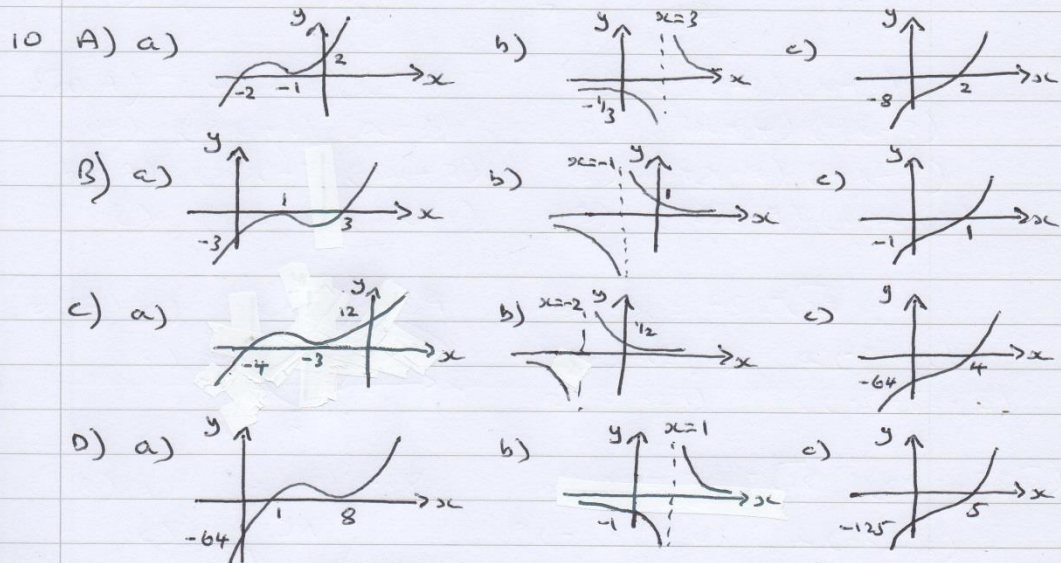
C) a) $(x+6)^2 - 43$ b) $x = -6 \pm \sqrt{43}$
c)  P $(-6 - \sqrt{43}, 0)$ Q $(-6, -43)$
R $(0, -7)$ S $(-6 + \sqrt{43}, 0)$

D) a) $(x+9)^2 - 82$ b) $x = -9 \pm \sqrt{82}$
c)  P $(-9 - \sqrt{82}, 0)$ Q $(-9, -82)$
R $(0, -1)$ S $(-9 + \sqrt{82}, 0)$

- 7 A) $x = -2, y = 6$ or $x = 5, y = -1$
 B) $x = 3, y = 5$ or $x = -1, y = 9$
 C) $x = -2, y = 1$ or $x = -1, y = 0$
 D) $x = 10, y = -11$ or $x = -13, y = -34$

- 8 A) a) $2x - y - 11 = 0$ b) $-1/2$
 B) a) $4x - 3y - 17 = 0$ b) $-3/4$
 C) a) $2x - y + 11 = 0$ b) $-1/2$
 D) a) $x - y = 0$ b) -1

- 9 A) $3 \pm \sqrt{5}$ B) $4 \pm \sqrt{18}$ C) $-3 \pm \sqrt{8}$ D) $6 \pm \sqrt{43}$



- 11 A) $-10 \leq k \leq 10$
 B) $-5 \leq k \leq 5$
 C) $-10 \leq k \leq 10$
 D) $-1/2 \leq k \leq 1/2$