Foundations of Advanced Mathematics

AS Pure Mathematics Bridging Test 7

Questions

1 Three of the following statements are true and **one** is false. Which one is **false**?

A 0.01 is equivalent to 1%.

B 30% is equivalent to $\frac{1}{3}$.

C 0.04 is equivalent to $\frac{1}{25}$.

D 54% is equivalent to 0.54.

2 Which **one** of the following is the correct answer to $3\frac{1}{3} \times 4\frac{1}{2}$?

A $12\frac{1}{6}$

B $12\frac{2}{5}$

C $12\frac{5}{6}$

D 15

3 Three of the following statements are true and **one** is false. Which one is **false**?

A $(5.2 \times 10^5) \times (2 \times 10^3) = 1.04 \times 10^9$

B $(5.2 \times 10^5) \div (2 \times 10^3) = 2.6 \times 10^2$

C One third of 1.05×10^9 is 3.5×10^{10}.

D Six million can be written as 6×10^6.

4 Three of the following statements are true and **one** is false. Which one is **false**?

A $4x^2 + 5x^2 = 9x^2$

B $4x^2 \times 5x^2 = 20x^2$

C $x^2 \times x^{-2} = 1$

D $8x^2 \div 4x^2 = 2$

5 John is attempting to solve the equation $5(x+2)-2(x-1)=6$.

His working is shown in the four steps below but the final answer is incorrect. In **which** of the following lines **A**, **B**, **C** or **D** does the **first** error appear?

A $5x+10-2x-2=6$

B $3x+8=6$

C $3x=-2$

D $x=-\frac{2}{3}$

6 Which **one** of the following is the solution of the equation $x^2+5x=2$?

A $x=\frac{5\pm\sqrt{33}}{2}$

B $x=\frac{-5\pm\sqrt{17}}{2}$

C $x=\frac{5\pm\sqrt{17}}{2}$

D $x=\frac{-5\pm\sqrt{33}}{2}$

7 Three of the following statements are true and **one** is false. Which one is **false**?

A The solution of the inequality $x-1>3-x$ is $x>2$.

B The solution of the inequality $\frac{x}{2}<1-x$ is $x<1.5$.

C The solution of the inequality $\frac{2x+5}{3}\leq 1$ is $x\leq -1$.

D The solution of the inequality $2-3x<x-3$ is $x>1.25$.

8 Aswan goes to a shop and buys 3 pencils and 2 rubbers for 80p. Bathwah goes to the same shop and buys 4 pencils and 1 rubber for 70p.

Let p pence be the cost of a pencil and r pence be the cost of a rubber.

Which **one** of the following is a **correct** pair of equations for p and r?

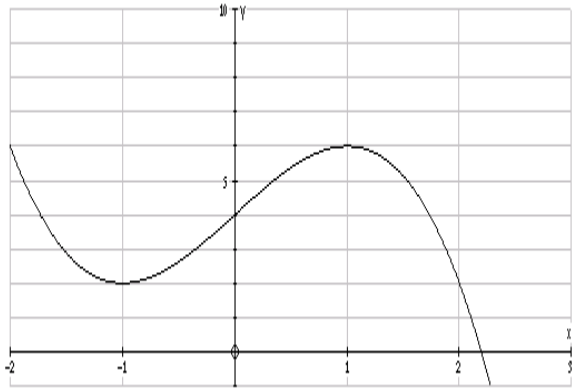
A $3p + 2r = 0.8$ and $4p + r = 0.7$

B $\frac{p}{3} + \frac{r}{2} = 80$ and $\frac{p}{4} + r = 70$

C $2p + 3r = 80$ and $p + 4r = 70$

D $3p + 2r = 80$ and $4p + r = 70$

9 The figure shows part of the curve with equation $y = 4 - x^3 + 3x$.



Three of the following statements are true and **one** is false. Which one is **false**?

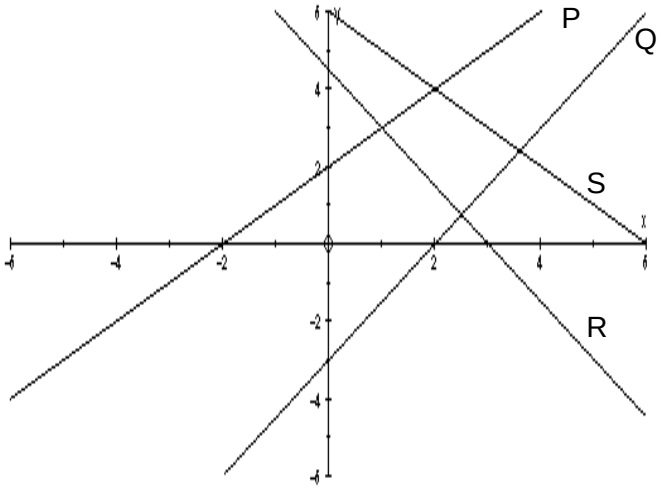
A The solution of the equation $4 - x^3 + 3x = 0$ is approximately $x = 2.2$.

B The solution of $4 - x^3 + 3x = 2$ is $x = 2$ and $x = -1$.

C When $k < 6$ the equation $4 - x^3 + 3x = k$ always has 3 roots.

D The gradient of the curve is positive in the range $-1 < x < 1$.

10



Three of the following statements about the lines P, Q, R and S on the graph are true and **one** is false. Which one is **false**?

A P has gradient 1.

B The gradient of P is greater than the gradient of Q.

C R has gradient −1.5.

D P and S are perpendicular.