NAME

Time:

Non-Calculator Questions

9th

1 Show that when x is a whole number, $5(2x + 3) + 4(x - 2)$ is always a multiple of 7.

(3 marks)

9th

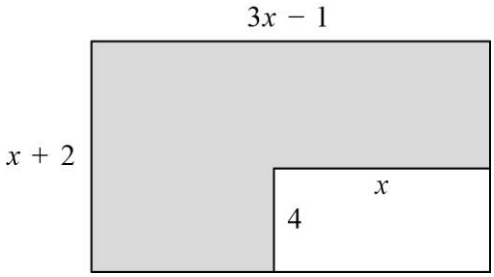
3 $f(x) = 3x + 5$

Work out a if $f(a) = -13$

(1 mark)

10th

5 The diagram shows a large rectangle of length $(3x - 1)$ cm and width $(x + 2)$ cm.



A smaller rectangle is cut out of the large rectangle.

The smaller rectangle has length x cm and width 4 cm.

The area of the shape that is left is 60 cm^2.

Show that $3x^2 + x - 62 = 0$

(3 marks)

10th

7 Simplify $\dfrac{3(x-5)}{x^2-3x-10}$

(2 marks)

11th

9 $a=\sqrt{\dfrac{x^3+2}{9}}$

Make x the subject of the formula.

(2 marks)

10th

11 Prove that $(3n + 5)^2 - (3n - 5)^2$ is a multiple of 12 for all positive values of n.

(3 marks)

13 The functions f and g are such that

$f(x) = 2(x - 1)$ and $g(x) = \frac{x+1}{3}$

8th

a Work out the value of f(8).

(1 mark)

12th

b Find $g^{-1}(x)$.

(2 marks)

12th

c Show that $f(x) = 4x - 6$

(2 marks)

12th

15 Rationalise the denominator of $\frac{4}{1+\sqrt{2}}$

(2 marks)

10th

17 Show that $\frac{x}{y+1} - \frac{x}{(y+1)^2}$ can be written as $\frac{xy}{(y+1)^2}$

(2 marks)

Overall mark	**/50**