

D Michaelmas Intro Sheet

A selection of questions based on material you covered last year.

1. Solve $\frac{2x-1}{3} - \frac{x-4}{2} = x + 3$.

$$x = -\frac{8}{5}$$

2. Make x the subject in $\frac{3x+a}{bx-6} = c$.

$$x = \frac{a+6c}{bc-3}$$

3. Evaluate $\left(\frac{4}{9}\right)^{-\frac{3}{2}}$.

$$\frac{27}{8}$$

4. A cone has volume 100π . Its base has radius 5. Find its *slant height*.

$$13$$

5. Factorise fully $8x^3 + 8x^2 - 6x$.

$$2x(2x+3)(2x-1)$$

6. Simplify $\frac{2x+3}{2x+1}$.

$$\frac{2x+3}{2x+1}$$

7. Combine the following into a fully simplified single term: $\frac{2}{(x+1)^2} - \frac{3}{(x+1)^3}$.

$$\frac{2x-1}{(x+1)^3}$$

8. P varies inversely with t . When $P = 7$, $t = 4$. Find P when $t = 50$.

$$\frac{14}{25}$$

9. Solve $8x + \frac{2}{x} = 17$.

$$x = 2 \text{ or } x = \frac{1}{8}$$

10. In triangle ABC , $AB = 7$, $BC = 8$, $AC = 9$.

(a) Find the largest angle in the triangle.

$$73.4$$

(b) Find the area of the triangle. [Brownie points for anyone who can do it without using any trigonometry.]

$$26.8$$

11. Prove that the opposite angles in a cyclic quadrilateral sum to 180° .

12. Factorise $2x^3 - 2$.

$$2(x-1)(x^2+x+1)$$