

F Michaelmas Trial Practice 4

1. Find the following:

- (a) $4781 + 349$.
 (b) $20356 - 1497$.
 (c) $517 - 2 \times 48$.
 (d) 49×31 .

$$5130$$

$$18859$$

$$421$$

$$1519$$

2. Expand and simplify:

- (a) $21x(3x - 2)$.
 (b) $2x^2y(y - x^2)$.
 (c) $(x - 3)(x + 6)$.
 (d) $(2x - 7)(4x + 3)$.
 (e) $(3x - 4)^2$.
 (f) $(x - 1)(x - 3)(x + 4)$.
 (g) $(x + 2)^3$.

$$63x^2 - 42x$$

$$2x^2y^2 - 2x^4y$$

$$x^2 + 3x - 18$$

$$8x^2 - 22x - 21$$

$$9x^2 - 24x + 16$$

$$x^3 - 13x + 12$$

$$x^3 + 6x^2 + 12x + 8$$

3. Solve the following for x

- (a) $5 + 3x = 18$.
 (b) $2 - 3(x - 4) = 5(x + 6)$.
 (c) $a(x - 2) = 4(x + 5)$.
 (d) $-5 = \frac{-2}{3x+4}$.
 (e) $\frac{3}{x-5} = \frac{7}{x+1}$.
 (f) $\frac{x+1}{3} - 2x + 1 = x - \frac{2-3x}{4}$.

$$x = \frac{13}{3} = 4\frac{1}{3}$$

$$x = -2$$

$$x = \frac{2a+20}{a-4}$$

$$x = -\frac{6}{5}$$

$$x = \frac{19}{2}$$

$$x = -\frac{2}{41}$$

4. Simplify the following expressions:

- (a) $\frac{(a^3)^3 \times a^2}{a \times a^{-3}}$.
 (b) $abc \times (ab^3c^2)^4$.

$$a^{13}$$

$$a^5b^{13}c^9$$

5. If $a = 4.6$ and $b = 3.1$ to two significant figures, find

- (a) the upper bound for a .
 (b) the lower bound for $2b + a$.
 (c) the upper bound for $b - 3a$.

$$4.65$$

$$10.65$$

$$-10.5$$

6. (a) Solve the simultaneous equations $\begin{cases} 3x+4y=1 \\ 2x-5y=2 \end{cases}$.

$$(x, y) = \left(\frac{13}{23}, -\frac{4}{23}\right)$$

(b) Solve the simultaneous equations $\begin{cases} x+5y=-1 \\ 2x+3y=1 \end{cases}$.

$$(x, y) = \left(\frac{8}{7}, -\frac{3}{7}\right)$$

7. Find the values of x

- (a) $25^x = \frac{1}{125^{2x-1}}$.
 (b) $\frac{2^x}{8^{1-x}} = 4^{7x-1}$.

$$x = \frac{3}{8}$$

$$x = -\frac{1}{10}$$

8. Solve the following inequalities:

(a) $2 - 3x \leq 4(x - 2)$.

(b) $43 \leq 2x + 3 < 77$.

$$x \geq \frac{10}{7}$$

$$20 \leq x < 37$$

- 9. (a) B
- 10. (a) B
- 11. (a) B
- 12. (a) B
- 13. (a) B
- 14. (a) B