

TB(2A) Ch. 3 Algebraic Fractions and Formulas
Conventional Questions

1. [11-12 F.2 Mid-year # 1]

Make a the subject of the formula $y = \frac{2a+1}{a-1}$. **(3 marks)**

2. [11-12 F4. Mid-term, 1]

(a) Factorize $2(3x^2 - 10) + 26x$. **(1 mark)**

(b) Hence, simplify $\frac{2(3x^2 - 10) + 26x}{9x^2 - 4} \times \frac{3x + 2}{x^2 + 5x}$. **(3 marks)**

3. [11-12 F4. Mid-term, 2]

Make y the subject of the formula $A = \frac{x-y}{\frac{1}{x} - \frac{1}{y}}$. **(3 marks)**

4. [11-12 F2. Final Exam, 1]

Simplify $2 - \frac{x+1}{3} \div \frac{1-x^2}{9x}$. **(3 marks)**

5. [12-13 S.2 Final Exam #6]

Simplify $\frac{a^2 - 4}{a^2 - 4a + 4} \times \frac{1}{a+2} - 1$. **(3 marks)**

6. [12-13 S.2 Mid-year Exam #10]

(a) Simplify $1 - \frac{1}{1-a} - \frac{2a}{a-1}$. **(2 marks)**

(b) Hence, simplify $\left(1 - \frac{1}{1-a} - \frac{2a}{a-1}\right) \div \frac{4a^2 + 8a + 4}{2a^2 - 2}$. **(3 marks)**

7. [13-14 S.2 Mid-year Exam #3]

Simplify $\frac{3x-13}{9x^2-169}$. **(2 marks)**

8. [13-14 S.2 Mid-year Exam #4]

(a) Make y the subject of the formula $a = bx - \frac{c}{y}$. **(2 marks)**

(b) Hence find the value of y if $a = 5$, $b = -2$, $c = -3$ and $x = 7$. **(2 marks)**

9. [13-14 S.2 Mid-year Exam #9]

Simplify $\frac{x^2 + y^2}{x^2 - y^2} \div \left(\frac{2x}{x - y} - 1 \right)$. (2 marks)

10. [13-14 S.2 Mid-year Exam #10]

Simplify $\frac{1 - x}{3x^2 - 29x + 56} \div \frac{x - 1}{6x^2 - 31x + 40} + \frac{x^2 - 16x + 54}{7 - x}$. (4 marks)

11. [13-14 S.2 Final Exam #8]

Simplify

(a) $\frac{1}{6m(m - n)} - \frac{1}{3(n - m)}$, (2 marks)

(b) $\frac{a^3 - 1}{a^2 - 1} \div \left[\frac{(a + 1)^2}{a} - 1 \right]$. (3 marks)

12. [14-15 Mid-year Exam]

It is given that the temperature F in Fahrenheit scale ($^{\circ}F$) can be calculated by the formula

$$F = \frac{9}{5}C + 32,$$

where C is the temperature in Celsius scale ($^{\circ}C$).

(a) Make C the subject of the formula. (1 mark)

(b) On a day, Chloe measures her body temperature at $100.4^{\circ}F$. The normal body temperature should be $37^{\circ}C$ or below. Explain whether she has a fever or not. (2 marks)

13. [14-15 Mid-year Exam]

(a) Simplify $\left(\frac{2x^2 + 12x + 18}{x^2 + 5x + 6} - 1 \right) \times \frac{3x + 6}{x^2 - 16}$. (3 marks)

(b) Hence, make x the subject of the formula

$$y = \left(\frac{2x^2 + 12x + 18}{x^2 + 5x + 6} - 1 \right) \div \left[\frac{(x + 4)(x - 4)}{3(x + 2)} \times \frac{6x}{x - 4} \right].$$
 (2 marks)

14. [14-15 S.2 Final Exam #1b]

(b) Simplify $\frac{4}{y - 4} + \frac{y}{y + 4}$. (2 marks)

15. [14-15 S.2 Final Exam #5]

Make P the subject of the formula $\frac{r}{P+1} = \frac{h}{P+t^2}$. **(2 marks)**

16. [15-16 S.2 Mid-year Exam #6]

- (a) Make r the subject of the formula. **(2 marks)**
(b) Find the value of r if $A = 5$, $p = 2$ and $t = 3$. **(2 marks)**

17. [15-16 Mid-year Exam #10]

(a) Simplify $\frac{2-11x}{(x+3)(1-2x)} - \frac{2x}{2x-1}$. **(3 marks)**

(b) Simplify $\frac{x^2-8x+16}{2x^2-5x-12} \times \frac{12(2x+3)}{4x^2-17x+4} \div \frac{12}{4x-1}$. **(3 marks)**

18. [15-16 Final Exam #2]

Simplify $\frac{x^2+3x-10}{x^2+4x-5} - \frac{2}{1-x}$. **(3 marks)**

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