

MCR-3UP

# Basic Skills Review

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1. a)  $-5y = -3x + 10$   $m = \frac{3}{5}$  b) (0, 2) 2.  $12x^2 + 15x - 4x - 5$  3. a)  $(m+9)(m-9)$   
 $y = \frac{3}{5}x + 2$   $12x^2 + 11x - 5$  b)  $(x+2)(x-9)$   
 4. a)  $x = 7$  and  $x = -6$  b)  $(x-2)(x-1)$  5. a) (7, 5) b) Max value c) downwards  
 $x = 2$  or  $x = 1$

6. a)  $6^0 = 1$  b)  $2^{-3} = \frac{1}{8}$  7. a) ①  $x = -4y + 7$  ② in ② b) ①  $\frac{2x}{3} - \frac{y}{2} = 2$  (6)  
 ②  $3x - 2y = -21$  (3)  $4x - 3y = 12$  (3)

8. a)  $3(2x^2 + 16x - 5x - 40)$  b)  $(4x+7)(4x+7)$  3  $(-4y+7) - 2y = -21$  ②  $3x - 15 - 2y - 6 + 10 = 0$   
 $= 3(2x^2 + 11x - 40)$   $= 16x^2 + 28x + 28x + 49$   $-12y + 21 - 2y = -21$  (4)  $3x - 2y = 11$  (4)  
 $= 6x^2 + 33x - 120$   $= 16x^2 + 56x + 49$   $-14y = -42$   $12x - 9y = 36$   
 $y = 3$   $-12x - 8y = 44$

9. a)  $x(9x^2 - 25)$  b)  $6x^2 10x + 4$  ① in ②  $3x - 2y = 11$   
 $x(3x+5)(3x-5)$   $2(3x^2 + 5x + 2)$   $3x - 2(8) = 11$   
 $2(3x^2 + 3x + 2x + 2)$   $3x - 16 = 11$   
 $2(3x(x+1) + 2(x+1))$   $3x = 27$   
 $2(3x+2)(x+1)$   $x = 9$   
 10. a)  $x^2 + 4x - 21 = 0$  c)  $x^2 + 4x - 1 = 0$   
 $(x-3)(x+7) = 0$   $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$   
 $x = 3$  or  $x = -7$   $x = \frac{-4 \pm \sqrt{16 + 4}}{2}$   
 $x = \frac{-4 \pm \sqrt{20}}{2}$

12.  $\frac{1}{16} + \frac{9}{4} - 1$   
 $\frac{21}{16}$

14.  $h = -2x(x-4)$

- a) 4m b)  $3 = -2x^2 + 8x$   
 $0 = -2x^2 + 8x - 3$   
 c)  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$   
 $x = \frac{-8 \pm \sqrt{64 - 24}}{2}$   
 $x = \frac{-8 \pm \sqrt{40}}{2}$   
 $x = -2$   
 $h = -2(2)(2-4)$   
 $h = -4(-2) = -8 \pm 6.35$   
 $h = 8m$   
 $= 0.43m$  and  $3.58m$

13. a)  $\sin 50^\circ = \frac{\sin 90^\circ}{25}$   
 $x = 19.2 \text{ cm}$   
 b)  $x^2 = y^2 + z^2 - 2yz \cos X$   
 $x^2 = 18^2 + 22.5^2 - 2(18)(22.5) \cos 71^\circ$   
 $x^2 = 324 + 506.25 - 810(0.326)$   
 $x^2 = 324 + 506.25 - 263.71$   
 $x^2 = 566.54$   
 $x = 23.8 \text{ cm}$

15. Reflected in x-axis, Vertically stretched BAF 2, translated horizontally 3 units right and Vertically 4 units up

16. a)  $x = -3$  b)  $x+4 = 24$  c)  $5x = 12$   
 $x = 20$   $x = \frac{12}{5}$   
 d)  $7x = 33$  e)  $3x + 9 = 5x + 11$  f) (12)  $\frac{r+5}{4} + \frac{r-2}{5} = 7$  (12)  
 $x = \frac{33}{7}$   $-2 = 2x$   $-1 = x$   
 $3r + 15 + 4r - 8 = 84$   
 $7r = 77$   
 $r = 11$