

Exam review Booklet Sheets (All 4 units)

Express each radical as a mixed radical in simplest form.

- i) $\sqrt[3]{56}$ (ii) $\sqrt{98}$ (iii) $\sqrt[3]{432}$ (iv) $\sqrt{180}$ (v) $\sqrt[3]{108}$

Express each radical as an entire radical

- (i) $3\sqrt[3]{5}$ (ii) $2\sqrt{6}$ (iii) $5\sqrt[3]{6}$ (iv) $7\sqrt{3}$ (v) $4\sqrt{7}$

Express each as a power

- (i) $\sqrt[3]{6^2}$ (ii) $(\sqrt{2})^7$ (iii) $\sqrt[6]{3^5}$ (iv) $(\sqrt{11})^{-3}$ (v) $\sqrt{21^5}$

Express each as a radical

- (i) $3^{5/2}$ (ii) $15^{-2/3}$ (iii) $42^{6/7}$ (iv) $9^{3/4}$ (v) $21^{-7/3}$

5) Laws of exponents: (Reduce and leave all answers with positive exponents)

- (a) $(-2x^3y^2)(7x^5y)$ (b) $(4x^6y^3)(6x^{-2}y^4)$ (c) $(-3a^6b)(ba^3)$

- d) $(3c)^4$ (e) $\frac{5n^3}{(2n)^3}$ (f) $\frac{(2x^3y^5)(6xy^{-4})}{3x}$

- g) $(5m^6n^4)^{-2}$ (h) $\frac{(3p^6)^{-3}}{t^{-5}}$ (i) $\frac{2n^4}{(4m^4n^0)(mn)}$

- j) $(4x^{-5}y^{-3})^{-4}$ (k) $\left[\frac{6x^7y^{-3}}{(3x)^{-2}(13xy)}\right]^0$ (l) $\left[\frac{a^5b^{-3}}{a^{-2}b^{-3}}\right]^2$

Ex) Mixed \rightarrow Entire

$$2\sqrt[3]{4}$$

$$= \sqrt[3]{2^3 \cdot 4}$$

$$= \sqrt[3]{8 \cdot 4}$$

$$= \sqrt[3]{32}$$

Answers			
i) $2\sqrt[3]{7}$	ii) $7\sqrt{2}$	iii) $6\sqrt[3]{2}$	iv) $6\sqrt{5}$
v) $3\sqrt[3]{4}$	vi) $4\sqrt{96}$	vii) $\sqrt[3]{750}$	viii) $\sqrt{147}$
ix) $3\sqrt[3]{4}$	x) $\sqrt{112}$	xi) $6^{2/3}$	xii) $2^{2/5}$
xiii) $-14x^8y^3$	xiv) $81c^4$	xv) $3^{5/6}$	xvi) $11^{-3/2}$ or $\frac{1}{11^{3/2}}$
xv) $24x^4y^7$	xvii) $5/9$	xviii) $21^{5/2}$	xix) $\frac{1}{25m^2n^3}$
xvi) $-3a^3b^2$	xviii) $4x^3y$	xx) $\frac{t^5}{27p^{18}}$	xxi) $\frac{n^3}{2m^5}$
			xxii) $\frac{x^{20}y^{12}}{25b}$
			xxiii) $(\sqrt{3})^5$
			xxiv) $(\sqrt[3]{21})^{-7}$ or $\frac{1}{(\sqrt[3]{21})^7}$
			xxv) $(\sqrt[3]{15})^{-2}$ or $(\frac{1}{\sqrt[3]{15}})^2$
			xxvi) $(\sqrt[3]{42})^6$
			xxvii) $(\sqrt[3]{9})^3$
			xxviii) $k) 1$
			xxix) $l) a^{14}$

Chapter 3: Factors & Products

[Exam Review]

1) Find the prime factors of (Tree)

- a) 350 b) 486 c) 6370 d) 924

2) Expand and simplify

- a) $(2a-5)^2$ b) $(3x-1)(2x+6)$ c) $(7x-3y)(-4x-2y-6)$
 d) $-4(x^2-3x-1) + 5(2x^2-5x-7)$ e) $(3x-5)(6x+4) - (x-2)(2x-7)$

3) Factor each of the following using:

a) Greatest Common Factor

- (i)
- $16x + 40$
- (ii)
- $18ab^2 + 42a^2b^4 - 36a^4b^5$
- (iii)
- $-12n^3m^2 - 16m + 24n^2m$

b) Simple Trinomials (Inspection Method)

- (i)
- $r^2 - 5r - 36$
- (ii)
- $r^2 + 6r - 7$
- (iii)
- $p^2 - 17p + 72$
-
- (iv)
- $a^2 - 3a - 40$
- (v)
- $2x^2 + 12x - 80$
- (vi)
- $4x^2 + 40xy + 64y^2$

c) Decomposition

- (i)
- $3x^2 - 17x + 10$
- (ii)
- $3x^2 + x - 4$
- (iii)
- $4n^2 - 15n + 9$
-
- (iv)
- $4x^2 + 17x + 4$
- (v)
- $2n^2 - 17n - 9$
- (vi)
- $3x^2 - 16x + 5$

d) Difference of Squares

- (i)
- $16x^2 - 9$
- (ii)
- $49x^2 - 64$
- (iii)
- $25x^2 - 81y^2$

e) Perfect Square

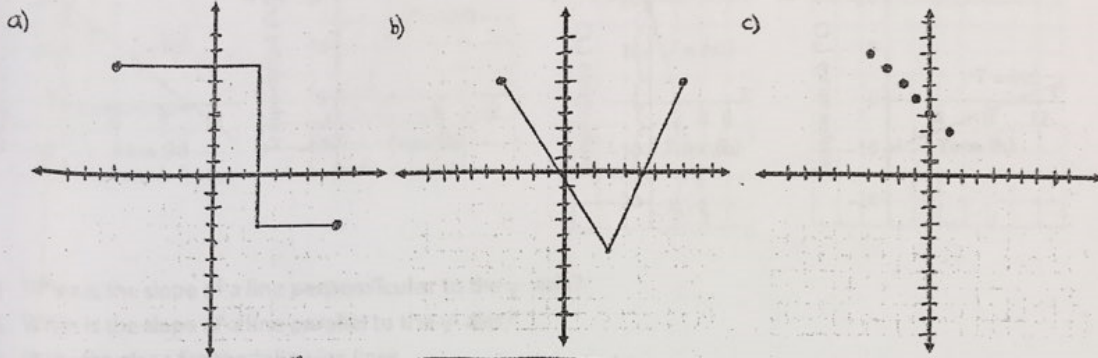
- (i)
- $9m^2 + 12m + 4$
- (ii)
- $16m^2 - 24mn + 9n^2$
- (iii)
- $25x^2 + 10xy + y^2$

Answers:

- 1a) $2, 5^2, 7$ 2a) $4a^2 - 20a + 25$ 3a) i) $8(2x+5)$ b) i) $(r-9)(r+4)$
 ii) $6ab^2 [3+7b^2-6a^2b^3]$ ii) $(r-1)(r+7)$
 iii) $-4m(3m^2-4+6n^2)$ (iii) $(p-8)(p-9)$
 (iv) $(a-8)(a+5)$
 (v) $2(x-4)(x+10)$
 (vi) $4(x+8y)(x+2y)$
 1b) $2, 3^5$ b) $6x^2 + 16x - 6$ 3b) i) $(4x-3)(4x+3)$ 3c) i) $(3m+2)^2$
 ii) $(4m-3n)^2$
 ii) $(5x+y)^2$
 c) $-28x^2 - 2xy - 42x + 184 + 6y^2$ (ii) $-4m(3m^2-4+6n^2)$
 d) $6x^2 - 13x - 31$ e) $16x^2 - 7x - 34$
 3c) i) $(x-5)(3x-2)$ iv) $(4x+1)(x+4)$
 ii) $(3x+4)(x-1)$ v) $(n-9)(2n+1)$
 iii) $(4n-3)(n-3)$ vi) $(3x-1)(x-5)$

Exam review Booklet Sheets (All 4 units)

- 1) For each of the following graphs determine if the graph is (i) Continuous or Discrete, (ii) Linear or Non-Linear, (iii) Function or Non-Function, (iv) State the Domain and Range



2) $f(x) = 4x^2 - 3x + 7$

$g(x) = \frac{-2x + 5}{3}$

$h(x) = 10(x - 2) + 6$

a) Evaluate each of the following using the above

- (i) $f(-3)$ (ii) $g(0)$ (iii) $h(1) - f(0)$ (iv) $g(h(0)) + f(2)$

b) using the above functions to solve

- (i) $h(x) = 116$ (ii) $g(x) = -9$

3) For a service call, an electrician charges a \$65.00 flat fee, plus \$30 for every hour worked.

- a) Develop an equation that represents the above (then put in function notation)
 b) The cost of 5 hours of work would be?
 c) If you pay the electrician \$545.00, how many hours did the electrician work?

4) A taxi charges a flat rate of \$5.50 and \$1.25 for each kilometre travelled.

- a) write an equation that represents the above (put in function notation)
 b) What is the customer paying for 15 km?
 c) If you pay \$34.25 how far did you travel?

Answers

a) Continuous
 Non-linear
 Non-function

$D = -6 \leq x \leq 8$

$R = -3 \leq y \leq 7$

b) Continuous
 Non-linear
 Function

$D = -4 \leq x \leq 8$

$R = -5 \leq y \leq 6$

c) Discrete
 Linear
 Function

$D = -4, -3, -2, -1, 0, 1$

$R = 3, 4, 5, 6, 7, 8$

$D: \{x \mid -4 \leq x \leq 1, x \in \mathbb{I}\}$
 $R: \{y \mid 3 \leq y \leq 8, y \in \mathbb{I}\}$

2) a) 52 (ii) $\frac{5}{3}$ (iii) -11 (iv) 12

b) (i) 13 (ii) 16

3a) $C(n) = 30n + 65$

b) $C(5) = \$215$

c) $h = 16$

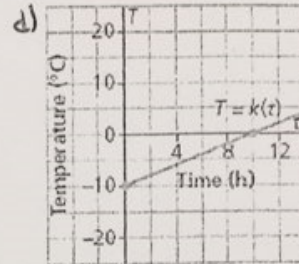
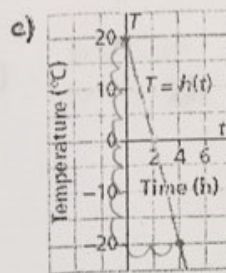
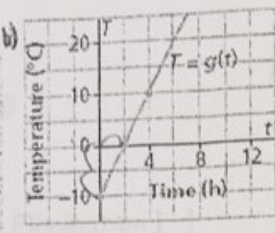
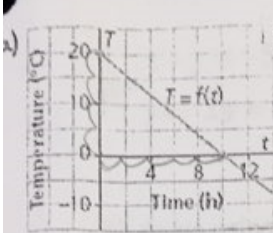
4a) $C(d) = 1.25(d) + 5.50$

b) $C(15) = 24.25$

c) $d = 23 \text{ km}$

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1) For each of the following graphs state the (i) slope/rate of change, (ii) the x intercept, (iii) the y intercept



- 2) What is the slope of a line perpendicular to the y-axis?
- 3) What is the slope of a line parallel to the y-axis?
- 4) State the slope for the following lines
 - a. (-2,3) and (5, 10)
 - b. (-13, -9) and (0,8)
 - c. (0,3) and (1,5)
- 5) For each line in question 4 state the slope of a line
 - i. Parallel to the line
 - ii. Perpendicular to the line
- 6) State the slope, x-intercept and y-intercept for each of the following
 - a. $y = -5x + 9$
 - b. $3x - 4y = 12$
 - c. $-4x + 5y - 10 = 0$
- 7) Write an equation of a line in
 - (i) Point slope form
 - (ii) slope intercept form
 - (iii) General form
 for each of the following
 - a) Line with a slope of 2 and a point (-1,5)
 - b) Line with a slope of $-3/4$ and a point (4,-18)
 - c) Passing through the point (2,5) and (-2,1)
 - d) Passing through (-11,7) and (9,15)
 - e) Passing through the point (-3,-7) and a slope parallel to $y = -9x - 7$
 - f) Passing through the point (0,6) and a slope perpendicular to $y = 3x + 5$
- 8) Given the $m = -1/4$ and passing through the points (6,-5) and (a,-6). What is the value of a?

Answers:

1a) $m = -2$

$x_{int} = 10 \rightarrow (10, 0)$

$y_{int} = 20 \rightarrow (0, 20)$

1b) $m = 2$

$x_{int} = 2 \rightarrow (2, 0)$

$y_{int} = -10 \rightarrow (0, -10)$

1c) $m = -10$

$x_{int} = 2 \rightarrow (2, 0)$

$y_{int} = 20 \rightarrow (0, 20)$

1d) $m = 1$

$x_{int} = 10 \rightarrow (10, 0)$

$y_{int} = -10 \rightarrow (0, -10)$

2) $m = 0$

3) $m = \text{undefined}$

4a) $m = 1$

5a) parallel $m = 1$

perp $m = -1$

4b) $m = \frac{17}{13}$

5b) parallel $m = \frac{17}{13}$

perp $m = -\frac{13}{17}$

4c) $m = 2$

5c) parallel $m = 2$

perp $m = -\frac{1}{2}$

6a) $m = -5$

$y_{int} = (0, 9)$

$x_{int} = (\frac{9}{5}, 0)$

6b) $m = \frac{3}{4}$

$y_{int} = (0, -3)$

$x_{int} = (4, 0)$

6c) $m = \frac{1}{5}$

$y_{int} = (0, 2)$

$x_{int} = (\frac{5}{2}, 0)$

7a) i) $y - 5 = 2(x + 1)$

ii) $y = 2x + 7$

iii) $2x - y + 7 = 0$

7b) $y + 18 = -\frac{3}{4}(x - 4)$

ii) $y = -\frac{3}{4}x + 15$

iii) $3x + 4y + 60 = 0$

7c) $y - 5 = 1(x - 2)$

$y - 1 = 1(x + 2)$

ii) $y = x + 3$

iii) $x - y + 3 = 0$

7d) $y - 7 = \frac{2}{3}(x + 11)$

ii) $y = \frac{2}{3}x + \frac{25}{3}$

iii) $2x - 3y + 57 = 0$

7e) $y + 7 = -9(x + 2)$

ii) $y = -9x - 11$

iii) $9x + y + 11 = 0$

7f) $y - 6 = -\frac{1}{3}(x)$

ii) $y = -\frac{1}{3}x + 6$

iii) $x + 3y - 18 = 0$

8) $a = 10$