

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) $\left[\frac{6x^7y^{-9}}{(3x)^{-2}(13xy)}\right]^0$ (l) $\left[\frac{a^5b^{-3}}{a^{-2}b^{-3}}\right]^2$

Ex) Mixed \rightarrow Entire
 $2\sqrt[3]{4}$
 $=\sqrt[3]{2^3 \times 4}$
 $=\sqrt[3]{8 \times 4}$
 $=\sqrt[3]{32}$

Answers				
i) $2\sqrt[3]{7}$	ii) $7\sqrt{2}$	iii) $6\sqrt[3]{2}$	iv) $6\sqrt{5}$	v) $3\sqrt[3]{4}$
2) $\sqrt[3]{135}$	iii) $\sqrt[3]{750}$	iv) $\sqrt{147}$	v) $\sqrt{112}$	
* 3) $6^{2/3}$	ii) $2^{7/5}$	iii) $3^{5/6}$	iv) $11^{-3/2}$ or $\frac{1}{11^{3/2}}$	v) $21^{5/2}$
4) i) $(\sqrt{3})^5$	ii) $(\sqrt[3]{15})^{-2}$ or $(\frac{1}{\sqrt[3]{15}})^2$	iii) $(\sqrt[7]{42})^6$	iv) $(\sqrt[4]{9})^3$	v) $(\sqrt[3]{21})^{-7}$ or $(\frac{1}{\sqrt[3]{21}})^7$
5a) $-14x^8y^3$	b) $24x^4y^7$	c) $-3a^3b^2$	d) $81c^4$	e) $\frac{5}{9}$
f) $4x^3y$	g) $\frac{1}{25m^2n^3}$	h) $\frac{t^5}{27p^{18}}$	i) $\frac{n^3}{2m^5}$	j) $\frac{x^{20}y^{12}}{25b}$
			k) 1	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) $r^2 + br - 7$ (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) $2, 5^2, 7$

b) $2, 3^5$

c) $2, 5, 7^2, 13$

d) $2^2, 3, 7, 11$

2a) $4a^2 - 20a + 25$

b) $6x^2 + 16x - 6$

c) $-28x^2 - 2xy - 42x + 184 + 6y^2$

d) $6x^2 - 13x - 31$

e) $16x^2 - 7x - 34$

3a) i) $8(2x+5)$

ii) $6ab^2 [3+7b^2-6a^2b^3]$

iii) $-4m(3m^2-4+6n^2)$

b) i) $(r-9)(r+4)$

ii) $(r-1)(r+7)$

iii) $(p-8)(p-4)$

iv) $(a-8)(a+5)$

v) $2(x-4)(x+10)$

vi) $4(x+8y)(x+2y)$

3c) i) $(x-5)(3x-2)$

ii) $(3x+4)(x-1)$

iii) $(4n-3)(n-3)$

iv) $(4x+1)(x+4)$

v) $(n-9)(2n+1)$

vi) $(3x-1)(x-5)$

3d) i) $(4x-3)(4x+3)$

ii) $(7x-8)(7x+8)$

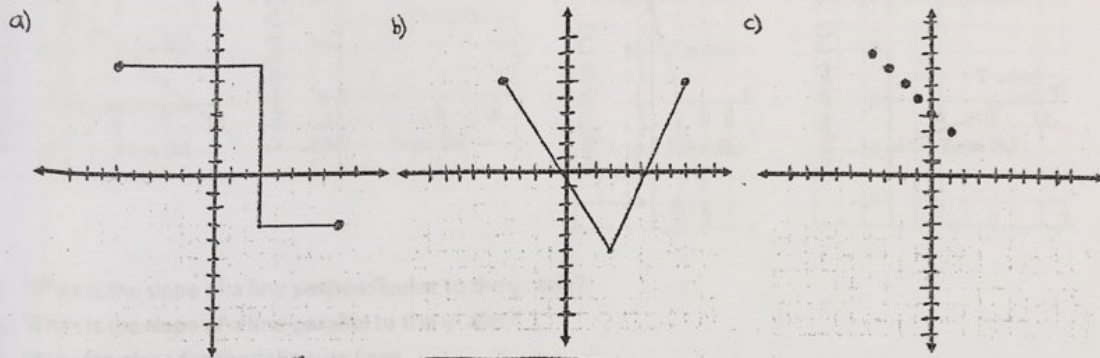
iii) $(5x-9)(5x+9)$

3e) i) $(3m+2)^2$

ii) $(4m-3n)^2$

iii) $(5x+y)^2$

- 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

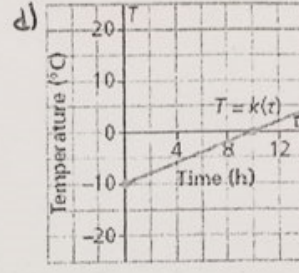
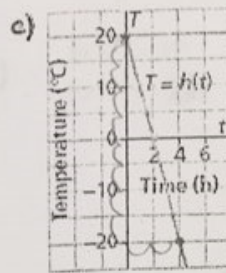
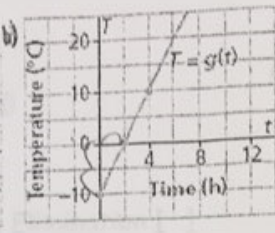
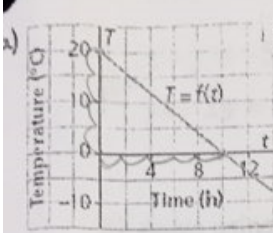
b) (i) 13 (ii) 16

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) $d = 23 \text{ km}$

Booklet Sheets (All 5 Units)

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



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

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

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) $a = 10$

Math 10 :
Systems of Equations Review

Name: _____

1) Solve the following systems using substitution []

a) $x + y = -5$
 $3x - 2y = 0$

b) $3y = x - 19$
 $5x + 3y = 221$

2) Solve using Elimination []

a) $3x + 5y = -21$
 $4x + 3y = -6$

b) $5x - 2y = -18$
 $-6x + 18y = 6$

3) Solve by either substitution or elimination:

A) $\frac{7}{4}x + \frac{4}{3}y = 3$
 $\frac{1}{2}x - \frac{5}{6}y = 2$

B) $4a - 3b = -3$
 $8a + 6b = 54$

C) $x - 2y = 6$
 $-7x + y = -16$

Word Problems:

- 4) The sum of 2 numbers is 377 and their difference is 107. Find the numbers. [2]
- 5) The length of a rectangle is 19 m longer than the width. If the perimeter is 606 m, what are the dimensions of the rectangle? [3]
- 6) A parking meter contained 110 coins made up of dimes and nickels. If the value of the coins was \$8.60, how many dimes and nickels are there? [3]

Answers:

- 1a) $x = -2$
 $y = -3$
- b) $x = 40$
 $y = 7$
- 2a) $x = 3$
 $y = -6$
- b) $x = -4$
 $y = -1$
- 3a) $x = \frac{124}{51}$
 $y = \frac{-16}{17}$
- b) $x = 3$
 $y = 5$
- c) $x = 8$
 $y = 2$
- 4) $x = 242$
 $y = 135$
- 5) $w = 142$
 $l = 161$
- 6) $d = 62$
 $n = 48$