Soln

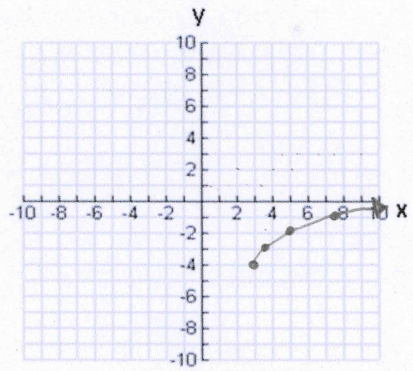
Grade 11 Overall Review Skills

1. Use transformations to graph the following and state the domain and range.

a) $y = \sqrt{2x-6} - 4$

$y = \sqrt{2(x-3)} - 4$

x	$y = \sqrt{x}$
0	0
1	1
4	2
9	3

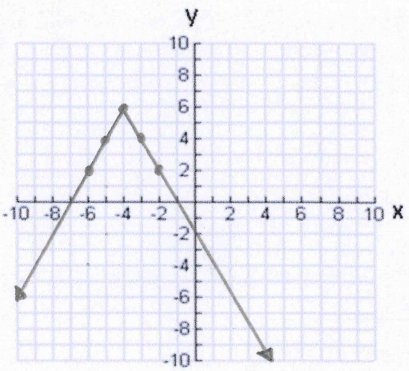


k = 2
d = 3
a = 1
c = −4

Domain: $\{x \in \mathbb{R} \mid x \geq 3\}$ **Range:** $\{y \in \mathbb{R} \mid y \geq -4\}$

b) $y = -2|x+4| + 6$

x	y=|x|
-2	2
-1	1
0	0
1	1
2	2



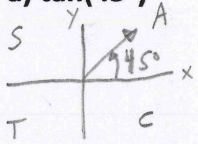
k = 1
d = −4
a = −2
c = 6

Domain: $\{x \in \mathbb{R}\}$ **Range:** $\{y \in \mathbb{R} \mid y \leq 6\}$

2. Determine the exact values for each trigonometric ratio.

a) tan(45°)

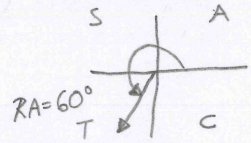
$\tan(45°) = 1$



b) sin(240°)

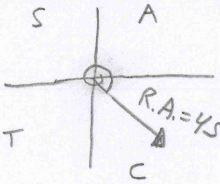
R.A.

$\sin(240°) = -\sin(60°) = -\frac{\sqrt{3}}{2}$



c) cos(-405°)

$\cos(-405°) = \cos(45°) = \frac{\sqrt{2}}{2}$



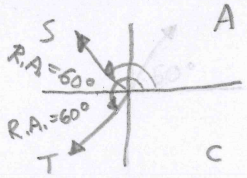
3. Solve each trigonometric equation; $0° \leq \theta \leq 360°$.

a) $\cos\theta = -0.5$

$\theta = \cos^{-1}(-0.5)$

$\theta_1 = 120°$

* Note: two solutions



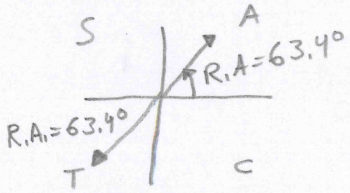
$\theta_2 = 180° + 60°$

$\theta_2 = 240°$

b) $\tan\theta = 2$

$\theta = \tan^{-1}(2)$

$\theta_1 \approx 63.4°$



$\theta_2 \approx 180° + 63.4°$

$\approx 243.4°$

4. Solve each exponential equation for x.

a) $9^{2x-2} = 27^{x+1}$

$3^{2(2x-2)} = 3^{3(x+1)}$

$3^{4x-4} = 3^{3x+3}$

$4x - 4 = 3x + 3$

$4x - 3x = 3 + 4$

$x = 7$

b) $2^x = 100$

$\log 2^x = \log 100$

$\frac{x \log 2}{\log 2} = \frac{\log 100}{\log 2}$

$x \approx 6.64$

5. Simplify each rational expression and state all restrictions (implicit and explicit).

a) $\frac{2x+6}{3x} \div \frac{x+3}{x}$

$= \frac{2(x+3)}{3x} \cdot \frac{x}{x+3}$

$= \frac{2}{3}, \quad x \neq -3, 0$

b) $\frac{4}{2x+2} + \frac{6}{x^2-x-2}$

$= \frac{4}{2(x+1)} + \frac{6}{(x-2)(x+1)}$

$= \frac{4(x-2)}{2(x+1)(x-2)} + \frac{6(2)}{2(x-2)(x+1)}$

$= \frac{4x-8+12}{2(x+1)(x-2)}$

$= \frac{4x+4}{2(x+1)(x-2)}$

$= \frac{2 \cdot 4(x+1)}{2(x+1)(x-2)}$

$= \frac{2}{x-2}, \quad x \neq -1, 2$