



**ENGINEERING MATHEMATICS SKILLS TEST  
SAMPLE**

1.  $64^{5/3}$

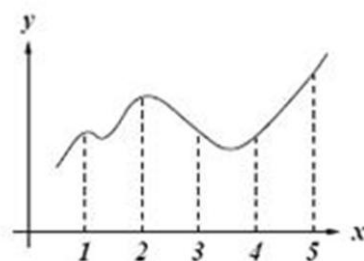
2. Solve  $|x+2| < 5$

3.  $(\cos x - 2\sin x)^2 =$

4. Two persons travel by car to separate cities in the same amount of time. The first person travels 310 kms at an average speed that is three kms per hour faster than the second person. The second person travels 215 kms. What is the average speed of the slower car?

5. Graph the parabola  $y = -2x^2 + 12x - 11$ . Indicate the vertex and the intercepts.

6. Find where the function  $f$ , pictured in the on the right, is decreasing



graph

7. Simplify the following expression

$$\frac{2x}{x-1} + \frac{2}{x+1}$$

8. What is the necessary condition for two lines to be parallel?

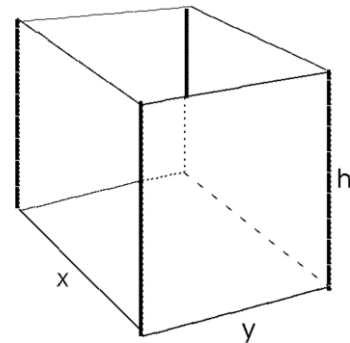
9. Solve the equation  $|2x-1|=x+2$

10. Find the equation of a line whose x intercept is (3, 0) and whose y-intercept is (0, -2)

11. Solve the following system of equations  $2x - 3 = 4$  and  $4x + 5 = 1$

12. Determine the domain of the function  $\frac{1}{\sqrt{x-3}}$

17. The box pictured below has a rectangular base and a closed top. Express its surface area in terms of  $x$ ,  $y$  and  $h$ .



18. Draw the graph of the function  $f(x) = e^x$ .

19. If  $f(x) = \frac{2}{x-4}$  and  $g(x) = x^2 - 1$  then find  $f(g(x))$  and  $g(f(x))$ .

20. Compute  $\log_2 16 - \log_3 81$

21. If  $0 < \theta < \frac{\pi}{2}$  and  $\sin(\theta) = \frac{3}{7}$  then find  $\tan(\theta)$

22. Draw the graph of  $y = \cos(x)$ .

23. Simplify  $\log(x) - \log(y) + \log(x^2)$