Practice Problems for Math Success

Domain Problems

These **practice problems** are designed to help you **prepare for our course exams** and **assess your understanding** of the course material at the expected level. Aim to complete them **in class, during tutoring, office hours, or on your own**, and try to solve them **without notes or a calculator**, just like on the **actual exams**. Remember, **practice makes perfect**, so don't hesitate to **ask for help** if you get stuck.

1. The domain of $S(x) = \sqrt{x-3}$ is

   (A) $(-\infty, 3)$
   (B) $(3, \infty)$
   (C) $(-\infty, 3]$
   (D) $[3, \infty)$
   (E) None of the above.

2. The domain of $T(x) = \dfrac{1}{\sqrt{x-3}}$ is

   (A) $(-\infty, 3)$
   (B) $(3, \infty)$
   (C) $(-\infty, 3]$
   (D) $[3, \infty)$
   (E) None of the above.

3. The zeroes of $q(x) = x^2 - 2x - 3$ are

   (A) 1 and 3
   (B) 1 and -3
   (C) -1 and 3
   (D) -1 and -3
   (E) None of the above.

4. The domain of $R(x) = \dfrac{1}{x^2 - 2x - 3}$ is

   (A) $(-\infty, -1) \cup (3, \infty)$
   (B) $(-1, 3)$
   (C) $(-\infty, -1) \cup (-1, 3) \cup (3, \infty)$
   (D) $(3, \infty)$
   (E) $(-1, \infty)$
   (F) None of the above.

5. The domain of $G(x) = \dfrac{\sqrt{x-3}}{x^2 - 2x - 3}$ is

   (A) $(-\infty, -1) \cup (3, \infty)$
   (B) $(-1, 3)$
   (C) $(-\infty, 3]$
   (D) $[3, \infty)$
   (E) $(-1, \infty)$
   (F) None of the above.

6. (a) Solve the following equation:

$$(3\sqrt{z}+4)(-2\sqrt{z}-1)(1-z)=0.$$

(b) What is the domain of $g(z)=\dfrac{1}{(3\sqrt{z}+4)(-2\sqrt{z}-1)(1-z)}$?

7. (a) Solve the following inequality:

$$3 - \frac{4x+5}{x+2} \geq 0.$$

(b) What is the domain of $g(x) = \sqrt{3 - \dfrac{4x+5}{x+2}}$?