

### Math 126: Introductory Quiz

Write neat, concise, and accurate solutions to each of the problems. No electronic devices are allowed.

1. Evaluate  $64.4 \times 2.25$ .

2. Express  $400/17$  as a decimal, correct to the nearest hundredth.

3. Express  $3 \cdot \frac{20 \cdot 21 \cdot 41}{6} + 4 \cdot \frac{20 \cdot 21}{2} - 4 \cdot 20$  as an integer.

4. Find the sum  $\frac{7}{6} + \frac{4}{5}$ .

5. 120 is 80% of what number?

6. List the numbers  $274$ ,  $0.4389 \times 274$ , and  $274 \div 0.8722$  in increasing order.

7. Find the perimeter and area of a rectangle that has a length of  $18\frac{2}{3}$  feet and a width of 7.5 feet.

8. Let  $f(x) = \frac{1}{3}x^3 - \frac{5}{2}x^2 + 4x$ . Compute  $f(4) - f(1)$ .

9. Express  $\frac{4}{x+1} + \frac{3}{2x-5}$  as a single fraction.

10. Give the values of  $\sin(\pi/3)$ ,  $\cos(\pi/2)$ , and  $\tan(\pi/4)$ .

11. Use the technique of completing the square to find the vertex of the parabola  $y = x^2 - 6x + 20$ .

12. Find all values of  $x$  that satisfy the equation  $x^3 = 13x$ .

13. Find all values of  $x$  that satisfy the equation  $x^2 - 4x = 11$ .

14. Find all values of  $x$  that satisfy the equation  $\sqrt{x^2 - 9} = 4$ .

15. Find the quotient when  $x^3 - 4x^2 + 7x - 6$  is divided by  $x - 2$ .

16. Evaluate  $\lim_{x \rightarrow \infty} \frac{x^3 - 4x + 7}{8 + 5x^2 - 3x^3}$ .

17. Find  $f'(x)$  if  $f(x) = xe^{2x^2}$ .

18. Find  $g'(x)$  if  $g(x) = \ln(x^2 + 3x + 5)$ .

19. Find  $F'(2)$  for the function  $F(x) = \frac{x}{x^2 - 1}$ .

20. Answer true or false for each of the statements.

a.  $(a + b)^2 = a^2 + b^2$

b.  $x^{-2} = \sqrt{x}$

c.  $\sqrt{y^2} = y$

d.  $\sqrt{x^2 + y^2} = x + y$

e.  $\frac{a^2 + b}{ac} = \frac{a + b}{c}$

f.  $\frac{x - y}{z} = \frac{x}{z} - \frac{y}{z}$

21. Sketch a graph of each of the four functions whose equations are given.

