

PRACTICE FINAL EXAM – SEMESTER 1

Read each question carefully. Circle one response.

1. Given $5a - 3bc = 15$, solving for c would yield

a) $c = \frac{5a+15}{3b}$

b) $c = 15 - 5a - 3b$

c) $c = \frac{5a-15}{-3b}$

d) $c = \frac{-5a+15}{-3b}$

2. Given $xz = wr + t$, solving for r would yield

a) $r = xz - t - w$

b) $r = xz + t + w$

c) $r = \frac{xz-t}{w}$

d) $r = \frac{xz+t}{w}$

3. Solve $x^2 - 10x + 24 = 0$

a) $x = 4, 6$

b) $x = -4, -6$

c) $x = 3, 8$

d) $x = -3, -8$

4. Solve $|7x + 4| = 10$

a) $x = -2$

b) $x = -2, 2$

c) $x = -2, \frac{6}{7}$

d) $x = 2, -\frac{6}{7}$

5. Solve $\sqrt{(2x + 5)} - 3 = 2$

a) $x = 10$

b) $x = -10, 10$

c) $x = 2$

d) $x = 20$

6. Solve $\frac{8}{9} = \frac{2}{x}$

a) $x = \frac{11}{8}$

b) $x = \frac{3}{8}$

c) $x = \frac{8}{18}$

d) $x = \frac{18}{8}$

7. Solve $-3x = 2 - 4(x + 1)$

- a) 1
- b) -2
- c) $\frac{2}{7}$
- d) $\frac{6}{7}$
- e) 2

8. Solve $\frac{5}{7} - \frac{8x}{7} = 4$

- a) $\frac{8}{23}$
- b) $\frac{31}{56}$
- c) $\frac{20}{8}$
- d) $-\frac{23}{8}$

9. The transformation $f(x - 1)$ can be described as

- a) A horizontal shift right
- b) A horizontal shift left
- c) A vertical shift up
- d) A vertical shift down

10. A reflection about the y-axis can be denoted as

- a) $-f(-x)$
- b) $f(-x)$
- c) $-f(x)$
- d) $f(x) - 1$

11. The transformation $f(x) + 1$ can be described as

- a) A vertical shift up
- b) A vertical shift down
- c) A horizontal shift right
- d) A horizontal shift left

12. The transformation $g(x) = \sqrt{2x}$ can be described as

- a) A vertical stretch
- b) A horizontal stretch
- c) A vertical compression
- d) A horizontal compression

13. The parent function $f(x) = x^2$ is vertically compressed by a factor of $\frac{1}{4}$ and translated 2 units right and 3 units up. Select the quadratic function that represents these transformations.

a) $g(x) = \frac{1}{4}(x - 2)^2 + 3$

b) $g(x) = 4(x - 2)^2 + 3$

c) $g(x) = \frac{1}{4}(x + 2)^2 + 3$

d) $g(x) = (4x + 2)^2 - 3$

14. David paints. A local distributor wants to contract David for his art work. The distributor will pay David \$200 per painting. In addition, they will give him a signing bonus of \$1000. The equation that models David's income from his art work is....

a) $y = 200x^2 + 1000$

b) $y = 1000x + 200$

c) $y = 200x + 1000$

d) $y = 200x - 1000$

15. Emma wants to start offering horseback riding lessons. She has one horse and plans to charge by the lesson. If she made \$1,170 after selling 13 lessons, what was the rate of change?

a) \$90/hour

b) 90 hours/\$

c) \$90/lesson

d) 13 lessons/day

16. If Emma sold \$1980 worth of lessons in 7 days, what is the rate of change?

a) \$282.86/day

b) \$90/lesson

c) \$282.86/week

d) \$90/week

17. Given the table of values below, calculate the average rate of change on [3, 8].

Profit (\$)	450	546	210	698	1994	5630
Time (weeks)	3	4	5	6	7	8

a) $-\$1036/\text{week}$

b) $\$1036/\text{week}$

c) $\$386/\text{week}$

d) $-\$386/\text{week}$

18. Given $f(x) = \frac{1}{2}x^3 - 4$, find the average rate of change on [2, 4].

a) $\frac{1}{14}$

b) $-\frac{1}{14}$

c) 14

d) -14

19. The inverse of $f(x) = 6x + 1$ is
- $f^{-1}(x) = 6x + 1$
 - $f^{-1}(x) = -x - 6$
 - $f^{-1}(x) = \frac{x-1}{6}$
 - $f^{-1}(x) = \frac{x+1}{-4}$
20. Which of the following functions has an inverse that is a function?
- $gh(x) = (x - 8)^6 + 19$
 - $g(x) = .75x^{73} + 1$
 - $k(x) = 5 + 3x^{44}$
 - $f(x) = x^2 - 8$
21. A function $g(x)$ has a domain of $[5, \infty)$ and a range of $(-\infty, \infty)$. The domain and range of $g^{-1}(x)$ is
- $D: (-\infty, \infty), R: [5, \infty)$
 - $D: (-\infty, \infty), R: (5, \infty)$
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 - $D: [5, \infty), R: (-\infty, \infty)$
22. The inverse relation of $S = \{(-4, 6), (3, 2), (4, 0), (8, -3), (-1, 6)\}$ is
- $S^{-1} = \{(6, -4), (2, 3), (0, 4), (-3, 8), (6, -1)\}$
 - $S^{-1} = \{(-6, 4), (2, 3), (0, 4), (3, -8), (-6, 1)\}$
 - $S^{-1} = (6, -4), (3, 2), (0, 4), (-3, 8), (6, -1)$
 - $S^{-1} = \{(-6, 4), (-2, -3), (0, -4), (3, -8), (-6, 1)\}$
23. Referring to question #22, is S^{-1} a function?
- yes
 - no
24. The inverse of $f(x) = \frac{1}{2}x^3 + 3$ is
- $f^{-1}(x) = \sqrt[3]{\frac{1}{2}x - 3}$
 - $f^{-1}(x) = \pm \sqrt[3]{2x - 6}$
 - $f^{-1}(x) = \pm \sqrt[3]{\frac{1}{2}x - 6}$
 - $f^{-1}(x) = \sqrt[3]{2x - 6}$
25. Referring to question #24, is $f^{-1}(x)$ a function?
- yes
 - no