

Intermediate Mathematics – Sample Questions

(use of calculator not permitted)

1. $(13) - (-7) + (-9) =$

2. $(-5)^2 =$

3. $8.1 \times 10^3 =$

4. Write 0.45 as a percent

5. Change 0.025 to a fraction in lowest terms

6. $\sqrt{25-9} =$

7. $\sqrt{25} - \sqrt{9} =$

8. $6a^4 \times 3a^2 =$

9. $\frac{14x^8}{2x^2}$

10. Evaluate $5ab$ if $a = 2$ and $b = 6$

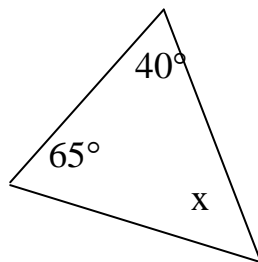
11. Evaluate $\frac{1}{4}x - y$
if $x = -8$ and $y = -1$

12. Simplify $3(5x+3y)(2x-3y)$

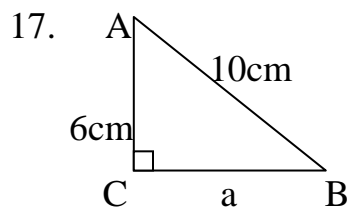
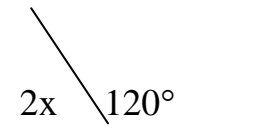
13. Factor $6x^4y + 9x^2y^5$

14. Factor $x^2 + 7x + 10$

15. Solve x .



16. Solve x .



a) Solve length a . [use the Pythagorean Theorem]

b) slope $AB =$ [use formula $\frac{\text{rise}}{\text{run}}$]

c) $\cos B =$ [use formula

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}]$$

Solutions for Mathematics Intermediate Sample Questions

- | | | | | | | | | | |
|------|--------------|-----|------------------------|-----|----------------------|----|--------|-----|----------------|
| 1. | 11 | 2. | 25 | 3. | 8 100 | 4. | 45 % | 5. | $\frac{1}{40}$ |
| 6. | 4 | 7. | 2 | 8. | $18a^6$ | 9. | $7x^6$ | 10. | 60 |
| 11. | -1 | 12. | $30x^2 - 27xy - 27y^2$ | 13. | $3x^2y(2x^2 + 3y^4)$ | | | | |
| 14. | $(x+5)(x+2)$ | 15. | 75° | 16. | 30° | | | | |
| 17a) | 8cm | b) | $\frac{-3}{4}$ | c) | $\frac{4}{5}$ | | | | |

Emery Adult Learning Centre
Senior Math Sample Test

1. Which equation represents the equation of the axis of symmetry for parabola $f(x) = -3(x+4)^2 + 2$?

- a. $x = 12$
- b. $x = -4$
- c. $x = 4$
- d. $y = 2$

2. What number must you add to $x^2 + 12x$ to create a perfect square?

- a. 6
- b. 12
- c. 36
- d. 144

3. Write $(\sqrt{36})^5$ in exponential form.

- a. $36^{\frac{5}{2}}$
- b. $36^{\frac{2}{5}}$
- c. $6^{\frac{2}{5}}$
- d. $6^{\frac{5}{2}}$

4. Simplify so that the expression is a single power with a positive exponent: $\left(\frac{k^4}{k^{-7}}\right)^{-3}$.

- a. $\frac{1}{k^{33}}$
- b. $\frac{1}{k^9}$
- c. k^{33}
- d. k^9

5. Determine the value of h that makes the following a true statement: $4^h = \frac{1}{256}$.

- a. $\square 5$
- b. $\frac{1}{5}$
- c. $\frac{1}{4}$
- d. -4

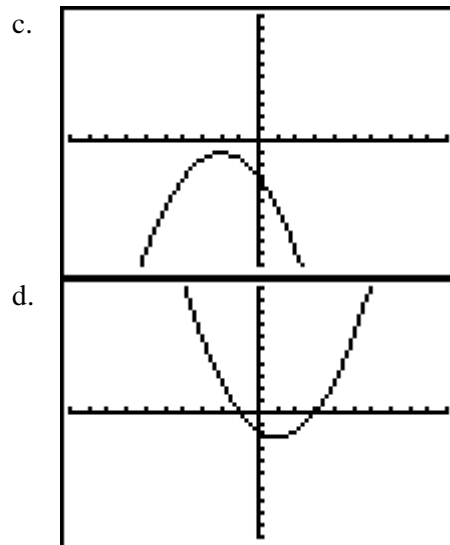
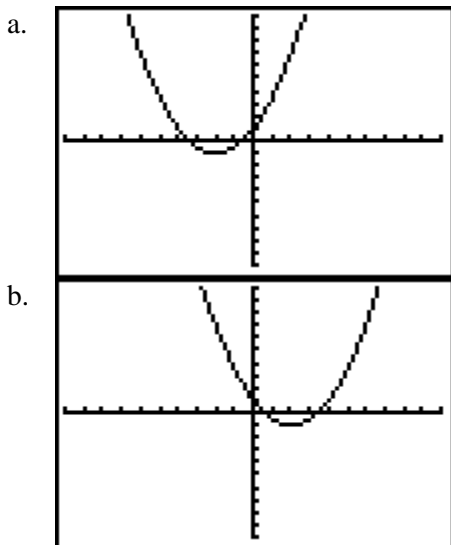
6. If $3^{x^2+1} = 243$, then x is equal to

- a. 5 or 0
- b. 2 or -2
- c. 4 or -4
- d. 2

7.. Solve the equation $\log(x-3)^2 = 2$.

- a. $x = 13$
- b. $x = -7$
- c. $x = 3$
- d. A and B

8..The graph that best represents $y = \frac{1}{2}(x-2)^2 - 1$ is



9. $\frac{-4c^2}{45a^2}$ is the simplified form of

a. $\frac{4a^3b}{-6ac} \times \frac{2b^2c^3}{15a^4b^3}$

b. $\frac{-15a^2c^2}{8a^3bc} \times \frac{-18a^3b^2}{-3b^3c}$

c. $\frac{-3ab^2}{4c^3b^4} \times \frac{6a^3b^3}{18ab}$

d. $\frac{12b^3c}{-15abc^2} \times \frac{-4a^3b}{-3ac^2}$

10. If $\cos \theta = -\frac{\sqrt{3}}{2}$ and $0^\circ < \theta < 360^\circ$, the exact value(s) of θ is

a. $\frac{\pi}{6}, \frac{5\pi}{6}$

b. $\frac{5\pi}{6}, \frac{7\pi}{6}$

c. $\frac{7\pi}{6}, \frac{11\pi}{6}$

d. $\frac{\pi}{6}, \frac{11\pi}{6}$

11. Solve the equation $\frac{x+2}{x-7} = \frac{x+7}{x+3}$.

a. $x = -11$

b. $x = -\frac{55}{6}$

c. $x = 7, x = -3$

d. no solution

12.. Evaluate, using the laws of logarithms.

$$\log_6 9 + \log_6 18 + \log_6 8$$

a. 1

b. 2

c. 4

d. 6

Solutions:

1) B, 2)C, 3) A, 4) A, 5)D, 6)B, 7) D, 8)B, 9) A, 10) B, 11) A, 12) C