

MTH 151–ALGEBRA EXAM TWO (AL2): SAMPLE EXAM

PROBLEM 1. Solve the inequality

$$1 \leq \frac{(x-7)}{3} \leq 6$$

Which of the following is the solution?

- A. $-1 \leq x \leq 1$ B. $-5 \leq x \leq 15$ C. $-3 \leq x \leq 9$ D. $10 \leq x \leq 25$ E. $3 \leq x \leq \frac{7}{2}$
 F. $-4 \leq x \leq 15$ G. $-7 \leq x \leq 1$ H. $-1 \leq x \leq 4$ I. $0 \leq x \leq 1$ J. Not listed here.
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PROBLEM 2. Use a calculator to solve the given equation. Round your answer off to four digits after the decimal point. The rightmost digit in your answer is:

$$\frac{-4.57x - 3.61}{2.78} - \frac{3.11x - 2.46}{3.44} = 1.77x$$

- A. 1 B. 0 C. 6 D. 3 E. 9
 F. 2 G. 4 H. 5 I. 7 J. 8
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PROBLEM 3. The supply for a certain commodity is given by $p = 3 + 3x$, and the demand is given by $p = 99 - \frac{3x}{7}$. Then the equilibrium demand is closest to

- A. 34 B. 24 C. 28 D. 40 E. 44
 F. 32 G. 38 H. 30 I. 26 J. 36

PROBLEM 4. And the equilibrium price is closest to

- A. 127 B. 79 C. 95 D. 143 E. 103
 F. 111 G. 71 H. 119 I. 151 J. 87
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PROBLEM 5. Find the equation of the line that passes through (9,6) and (36,6) and put it into slope intercept form. The y-intercept is closest to

- A. -1 B. 7 C. 9 D. 2 E. 3
 F. 6 G. 5 H. 8 I. 4 J. 0
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PROBLEM 6. Which of the following intervals is the domain of the function

$$f(x) = \frac{1}{2 - 4x}$$

- A. $(-\infty, \frac{1}{2}) \cup [\frac{1}{2}, \infty)$ B. $(-\infty, \frac{1}{2}) \cap (\frac{1}{2}, \infty)$ C. $(-\infty, -\frac{1}{2}) \cap (-\frac{1}{2}, \infty)$ D. $(-\infty, -\frac{1}{2}) \cup (-\frac{1}{2}, \infty)$
 E. $(-\infty, \frac{1}{2}] \cup [\frac{1}{2}, \infty)$ F. $(-\infty, -\frac{1}{2}) \cup [-\frac{1}{2}, \infty)$ G. $(-\infty, -\frac{1}{2}] \cup (-\frac{1}{2}, \infty)$ H. $(-\infty, \frac{1}{2}) \cup (\frac{1}{2}, \infty)$
 I. $(-\infty, \frac{1}{2}] \cup (\frac{1}{2}, \infty)$ J. Not listed here

EXAM CONTINUES ON BACK OF SHEET

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PROBLEM 7. The Penn-Ohio Coal Company delivers no. 5 bituminous coal for \$900 per car load. Monthly costs for management, machinery, licenses, etc. are \$19,000. Also, each car load requires \$400 for fuel, bits, labor etc. Construct the cost, revenue and profit functions. Then average cost(10) is closest to

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|-----------|-----------|-----------|-----------|-----------|
| A. \$2000 | B. \$2500 | C. \$2200 | D. \$2700 | E. \$2800 |
| F. \$2600 | G. \$2100 | H. \$1800 | I. \$2300 | J. \$2400 |

PROBLEM 8. The break-even quantity is closest to

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|-------|-------|-------|-------|-------|
| A. 34 | B. 22 | C. 36 | D. 38 | E. 28 |
| F. 24 | G. 26 | H. 20 | I. 40 | J. 30 |
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PROBLEM 9. The solution to

$$x^2 - x - 6 < 0$$

is?

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|---------------------------|------------------------|---------------------------|
| A. $0 < x < 3$ | B. $x < -3$ or $x > 0$ | C. $2 < x < 3$ |
| D. $0 < x < 2$ or $x > 3$ | E. $-3 < x < 2$ | F. $x < 0$ or $2 < x < 3$ |
| G. $-2 < x < 3$ | H. $x < 2$ or $x > 3$ | I. $x < -2$ or $x > 3$ |
| J. Not listed here | | |
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PROBLEM 10. The supply for a certain commodity is given by $p = .001q^3 + .1q^2 + .3q$, and the demand is given by $p = -.0037q^3 + .432q^2 - 18.45q + 2150$. p denotes price and q denotes supply. The equilibrium supply is closest to:

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|--------|--------|--------|--------|--------|
| A. 100 | B. 170 | C. 160 | D. 110 | E. 90 |
| F. 150 | G. 120 | H. 80 | I. 180 | J. 130 |

PROBLEM 11. The equilibrium price is closest to:

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|---------|--------|---------|---------|---------|
| A. 300 | B. 600 | C. 1650 | D. 750 | E. 450 |
| F. 1350 | G. 150 | H. 900 | I. 1200 | J. 1500 |
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PROBLEM 12. Simplify $\frac{f(x+h)-f(x)}{h}$ given $f(x) = 2x^2 + 4x + 3$

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|-------------------|-------------------|-------------------|-------------------|---------------------|
| A. $4x + 2h - 4$ | B. $4x + 2h$ | C. $4x - 2h - 4$ | D. $4x - 2h + 4$ | E. $4x - 2h$ |
| F. $-4x + 2h + 4$ | G. $-4x + 2h - 4$ | H. $-4x - 2h + 4$ | I. $-4x + 2h - 4$ | J. Not listed here. |

The correct answers are: 1-D, 2-A, 3-C, 4-J, 5-F, 6-H, 7-I, 8-D, 9-G, 10-E, 11-F, 12-J