

Name _____
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Date _____
Algebra II

Key Points with TI Practice

1. Given the function $f(x) = x^3 + 3x^2 - x - 2$, find the zeros and relative extrema to the nearest hundredth.
2. Given the function $f(x) = x^4 - 8x^2 + x + 8$, find the zeros and relative extrema to the nearest hundredth. What is the absolute minimum of the function?
3. Given the function $f(x) = x^3 + 8x^2 + 3x - 8$, find the zeros and relative extrema to the nearest hundredth.
4. The graphs of the equations $y = x^2 + 4x - 1$ and $y + 3 = x$ are drawn on the same set of axes. One solution of this system is
 - 1) $(-5, -2)$
 - 2) $(-1, -4)$
 - 3) $(1, 4)$
 - 4) $(-2, -1)$

5. When $g(x) = \frac{2}{x+2}$ and $h(x) = \log(x+1) + 3$ are graphed on the same set of axes, which coordinates best approximate their point of intersection?

- 1) (-0.9, 1.8) 3) (1.4, 3.3)
2) (-0.9, 1.9) 4) (1.4, 3.4)

6. Which value, to the *nearest tenth*, is *not* a solution of $p(x) = q(x)$ if $p(x) = x^3 + 3x^2 - 3x - 1$ and $q(x) = 3x + 8$?

- 1) -3.9 3) 2.1
2) -1.1 4) 4.7

7. To the *nearest tenth*, the value of x that satisfies $2^x = -2x + 11$ is

- 1) 2.5 3) 5.8
2) 2.6 4) 5.9

8. If $f(x) = 3|x| - 1$ and $g(x) = 0.03x^3 - x + 1$, an approximate solution for the equation $f(x) = g(x)$ is

- 1) 1.96 3) (-0.99, 1.96)
2) 11.29 4) (11.29, 32.87)

9. If $p(x) = 2\ln(x) - 1$ and $m(x) = \ln(x+6)$, then what is the solution for $p(x) = m(x)$?

- 1) 1.65 3) 5.62
2) 3.14 4) no solution

10. For which values of x , rounded to the *nearest hundredth*, will $|x^2 - 9| - 3 = \log_3 x$?

- 1) 2.29 and 3.63 3) 2.84 and 3.17
2) 2.37 and 3.54 4) 2.92 and 3.06

11. Given: $h(x) = \frac{2}{9}x^3 + \frac{8}{9}x^2 - \frac{16}{13}x + 2$

$$k(x) = -|0.7x| + 5$$

State the solutions to the equation $h(x) = k(x)$, rounded to the *nearest hundredth*.

12. For a fundraiser, members of the math club decide to make and sell t-shirts. Their profit

$p(x)$ can be modeled by the function $p(x) = -\frac{1}{78}(x^3 - 53x^2 - 236x + 9828)$ where x is the

number of t-shirts sold. How many t-shirts would they have to sell to make their maximum profit? How many t-shirts would they have to sell to break even? Round all answers to the nearest unit.

13. The function below models the average price of gas in a small town since January 1st.

$$G(t) = -0.0049t^4 + 0.0923t^3 - 0.56t^2 + 1.166t + 3.23, \text{ where } 0 \leq t \leq 10.$$

If $G(t)$ is the average price of gas in dollars and t represents the number of months since January 1st, the absolute maximum $G(t)$ reaches over the given domain is about

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|-----------|-----------|
| 1) \$1.60 | 3) \$4.01 |
| 2) \$3.92 | 4) \$7.73 |

14. Sally's high school is planning their spring musical. The revenue, R , generated can be determined by the function $R(t) = -33t^2 + 360t$, where t represents the price of a ticket. The production cost, C , of the musical is represented by the function $C(t) = 700 + 5t$. What is the highest ticket price, to the *nearest dollar*, they can charge in order to *not* lose money on the event?