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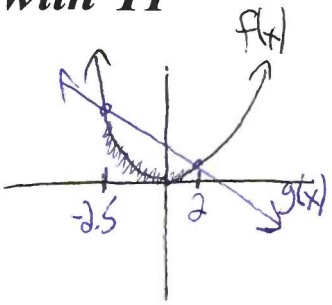
Date _____
Algebra II

Solving Systems of Inequalities Graphically with TI

1. Given $f(x) = x^2$ and $g(x) = -\frac{1}{2}x + 5$, over what interval is $f(x) < g(x)$?

( )

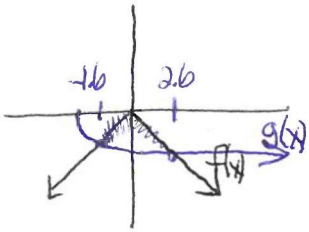
(-2.5, 2)



2. Given $f(x) = -|x|$ and $g(x) = -\sqrt{x+4}$, over what interval is $f(x) \geq g(x)$?

[ ]

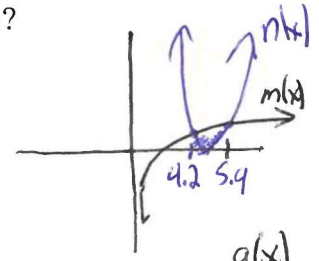
[-1.6, 2.6]



3. Given $m(x) = \log(x)$ and $n(x) = (x-5)^2$, over what interval is $m(x) \geq n(x)$?

[ ]

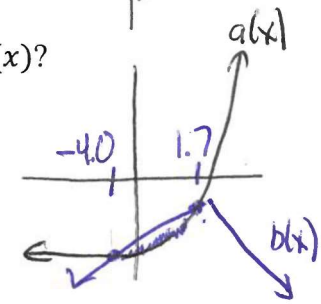
[4.2, 5.9]



4. Given $a(x) = e^x - 9$ and $b(x) = -|x-3| - 2$, over what interval is $a(x) < b(x)$?

( )

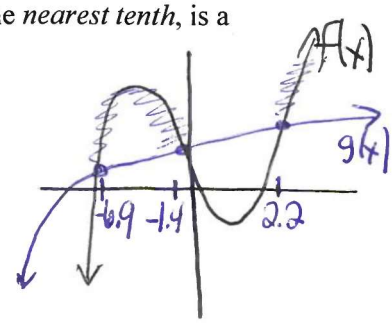
(-4.0, 1.7)



5. If $f(x) = \frac{1}{2}x^3 + 3x^2 - 4x$ and $g(x) = 5\log_3(x+10)$, then which value, rounded to the *nearest tenth*, is a solution to $f(x) > g(x)$?

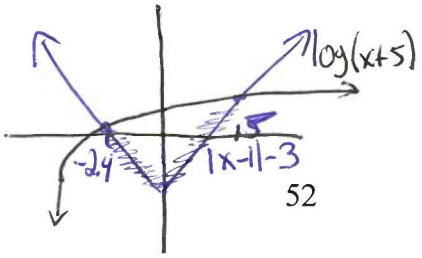
1) -7.0 ✗
2) -6.8 ✓
3) -1.1 ✗
4) 2.1 ✗

*adjust y max



6. For which value of x will $\log(x+5) \geq |x-1| - 3$?

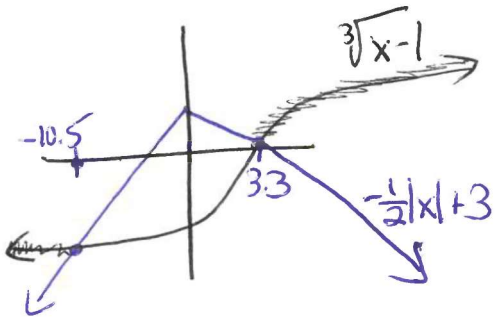
1) -6 ✗
2) -4 ✗
3) 4 ✓
4) 6 ✗



7. For which value of x will $\sqrt[3]{x-1} > -\frac{1}{2}|x| + 3$?

1) -3.1 ✗
2) 1.1 ✗
3) 2.7 ✗
4) 3.9 ✓

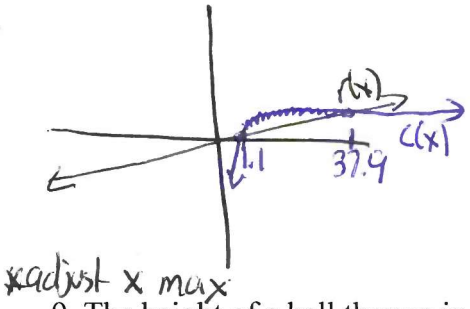
*adjust Xmin



8. The function $r(x) = \frac{1}{12}x$ represents the revenue from Carla's business and $c(x) = 2\log(x)$ represents her cost. To the *nearest tenth*, over what interval will $c(x) > r(x)$? Explain the meaning of this interval in the context of the problem.

for selling x units of merchandise.

(1.1, 37.9)

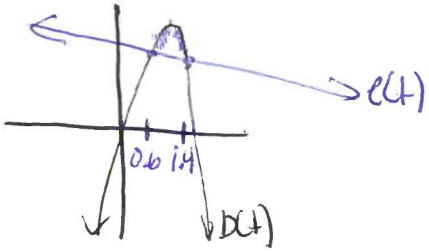


*adjust x max

From 1.1 to 37.9 units sold, her cost will be greater than her revenue.

9. The height of a ball thrown in the air can be modeled by $b(t) = -16t^2 + 32t$ and the height of an eagle can be modeled by $e(t) = -\frac{1}{2}t + 14$. To the *nearest hundredth*, over what interval is $e(t) < b(t)$? Explain the meaning of this interval in the context of the problem.

after t seconds.



*adjust y max

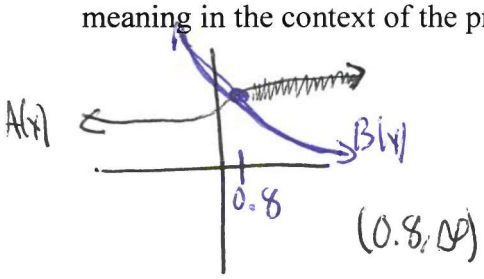
(0.6, 1.4)

From 0.6 to 1.4 seconds, the height of the eagle is below the height of the ball.

10. The height of object A can be represented by $A(x) = 2\sqrt[3]{x} + 15$ and the height of object B can be represented by $B(x) = 20(0.8)^x$. Over what interval is $A(x) \geq B(x)$? Explain its meaning in the context of the problem.

after x seconds.

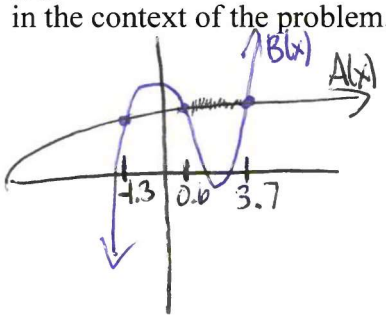
*adjust y max



(0.8, ∞)

After 0.8 seconds, the height of object A will always be above object B.

11. The value of stock A can be modeled by $A(t) = 2\sqrt{t+10} + 1$ and the value of stock B can be represented by $B(t) = t^3 - 3t^2 - 3t + 10$, where t represents time in days. Over what positive interval, rounded to the *nearest tenth*, is $A(x) > B(x)$? Explain the meaning of this interval in the context of the problem.



*adjust y max

(0.6, 3.7)

From day 0.6 to 3.7, the value of stock A is higher than the value of stock B.