A.REI.D.11: Other Systems 4

1 After examining the functions $f(x) = \ln(x+2)$ and $g(x) = e^{x-1}$ over the interval $(-2,3]$, Lexi determined that the correct number of solutions to the equation $f(x) = g(x)$ is

1) 1
2) 2
3) 3
4) 0

2 For which approximate value(s) of x will $\log(x+5) = |x-1| - 3$?

1) 5, 1
2) −2.41, 0.41
3) −2.41, 5
4) 5, only

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

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

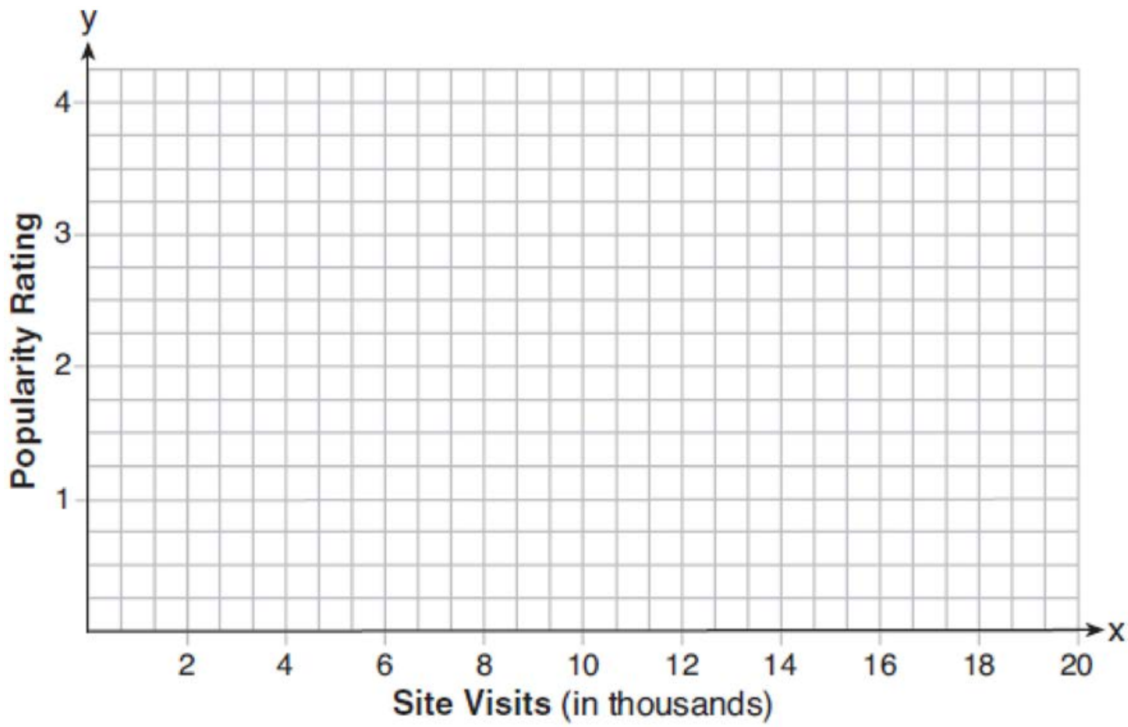
4 If $p(x) = 2\ln(x) - 1$ and $m(x) = \ln(x+6)$, then what is the solution for $p(x) = m(x)$?

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

5 Given $q(x) = 2\log(x)$ and $r(x) = (x-2)^3 - 4$, what is a solution of $q(x) = r(x)$ to the *nearest tenth*?

1) 1.1
2) 3.7
3) 3.9
4) 4.3

6 Website popularity ratings are often determined using models that incorporate the number of visits per week a website receives. One model for ranking websites is $P(x) = \log(x - 4)$, where x is the number of visits per week in thousands and $P(x)$ is the website's popularity rating. According to this model, if a website is visited 16,000 times in one week, what is its popularity rating, rounded to the *nearest tenth*? Graph $y = P(x)$ on the axes below.



An alternative rating model is represented by $R(x) = \frac{1}{2}x - 6$, where x is the number of visits per week in thousands. Graph $R(x)$ on the same set of axes. For what number of weekly visits will the two models provide the same rating?

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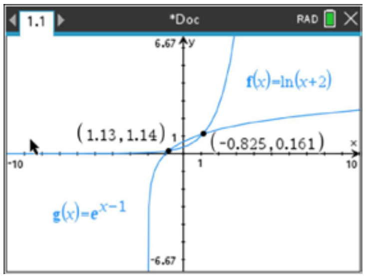
Answer Section

1 ANS: 2



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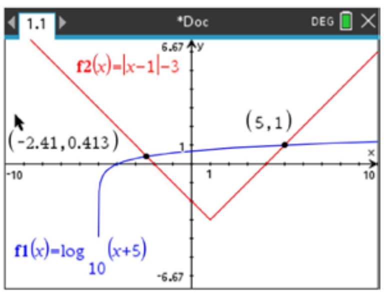
2 ANS: 3



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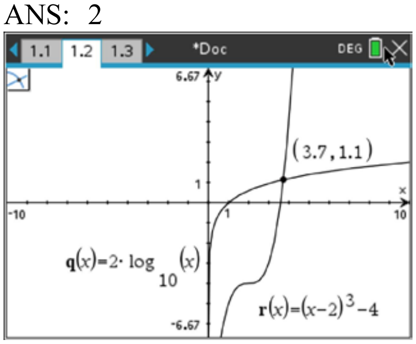
3 ANS: 1 REF: 011814aii

4 ANS: 3 REF: 081819aii

5 ANS: 2



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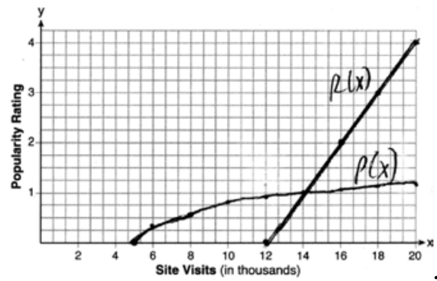
6 ANS:

$P(16) = \log(16-4) \approx 1.1$, 

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