Math 220 (section ?) – Quiz 2

Name _____

- **Put away all calculators, cell phones, iPods, etc.**
- **You have 10 minutes for this quiz.**

1. (4 points) Given that $f(x) = \frac{1}{4}\ln(2x-5)$, find a formula for $f^{-1}(x)$.

   Solution: Multiply through by 4 to get $4y = \ln(2x-5)$
   Exponentiate both sides, giving $e^{4y} = 2x - 5$
   Add 5 to both sides $e^{4y} + 5 = 2x$
   Divide by 2 $\frac{e^{4y}+5}{2} = x$

2. (3 points) Simplify the expression $\cos\left(\sin^{-1}(2x)\right)$.

   Solution: Use SohCahToa and draw a triangle!
   Sin = opposite/hypotenuse so the opposite side has length $2x$ and the hypotenuse has length 1 which makes the adjacent have length $\sqrt{1-4x^2}$
   Cos = adjacent/hypotenuse so, using the above information, $\cos(...) = \sqrt{1-4x^2}$

3. (3 points) Which one of the choices below equals $\lim_{x\to 5^-} \dfrac{10+x^2}{5-x}$?

   (a) $-\infty$
   (b) -10
   (c) -5
   (d) -2
   (e) 0
   (f) 2
   (g) 5
   (h) 10
   (i) ∞

   Solution: Well, the bottom is clearly 0 at $x = 5$. What about the top? It's 35, so there's not going to be any fancy cancellation. If we're coming in to 5 from below (as indicated by 5^-). We'll have $5 - x > 0$, so the limit is ∞, choice (i)