# Math 1513 - College Algebra

## Quiz #17 - 2018.10.24

## Solutions

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Construct a *possible* polynomial $p(x)$ whose graph is given below. Be sure to use end behaviour and multiplicity of roots to help construct your answer.

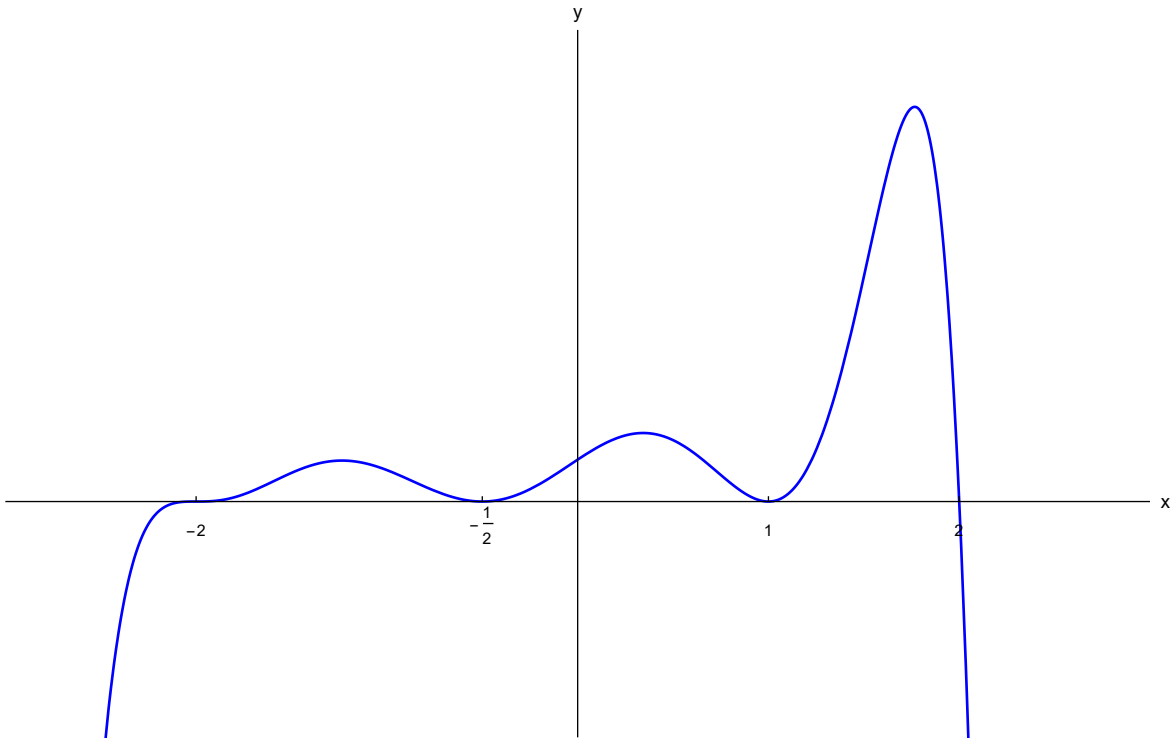


FIGURE 1. Graph of an unknown polynomial $p(x)$.

Note that there are roots at $x = -2$, $x = -1/2$, $x = 1$ and $x = 2$. The multiplicities for each, respectively, are odd, even, even, and odd. Upon close inspection, the multiplicity of the root at $x = -2$ has to be at least 3, while it appears that the multiplicity of the root at $x = 2$ appears to be 1. It is hard to determine from the graph if the multiplicities at $x = -1/2$ or $x = 1$ are greater than 2 (for instance, 4, 6, 8, etc...), so we will just let them be 2. Since the graph opens downward, the total degree is even and the coefficient out front must be negative. So consider: $p(x) = -(x+2)^3(2x+1)^2(x-1)^2(x-2)$.