

**PreCalc ACC '18  
Spring Final – Part 1  
Calculator Allowed**

**Name:** \_\_\_\_\_

**score** \_\_\_\_\_

**Show all work. Round to 3 decimals.**

1. Find the following derivatives:

a.  $\frac{d}{dx}(\sec 4x^2)$

b.  $\frac{d}{dx}(\ln(x^3 + 4x))$

c.  $\frac{d}{dx}(e^{-2x} \cos x)$

d.  $\frac{d}{dx}\left(\frac{e^{3x}}{16+x^2}\right)$

**You must do problems #3, #4, and #5.**

3. Find domain and zeros of  $f(x) = x^3 - x^2 - 16x + 16$  on  $x \in [-5, 6]$ .

4. Find the extreme points of  $f(x) = x^3 - x^2 - 16x + 16$  on  $x \in [-5, 6]$ . Show the algebraic work to support the critical values.

5. Find the Point of Inflection for  $f(x) = x^3 - x^2 - 16x + 16$ . Show the algebraic work to support the result.

**You may skip either # 6 and #7, or #8 and #9, or #10 and #11.**

6. Find domain and zeros of  $y = \sqrt{x^4 - 16x^2 + 36}$ .

7. Find the extreme points of  $y = \sqrt{x^4 - 16x^2 + 36}$ . Show the algebraic work to support the critical values.

8. Find domain, VAs, POEs, and zeros of  $g(x) = \frac{2x^2 - 9x - 5}{x^2 - 25}$ .

9. Find the extreme points of  $g(x) = \frac{2x^2 - 9x - 5}{x^2 - 25}$ . Show the algebraic work to support the critical values.

10. Find domain, VAs, and zeros of  $y = (x^2 - 6x)e^{x+1}$ .

11. Find the extreme points of  $y = (x^2 - 6x)e^{x+1}$ . Show the algebraic work to support the critical values.

PreCalc ACC '18  
Spring Final – Part 2  
NO Calculator Allowed

Name: \_\_\_\_\_

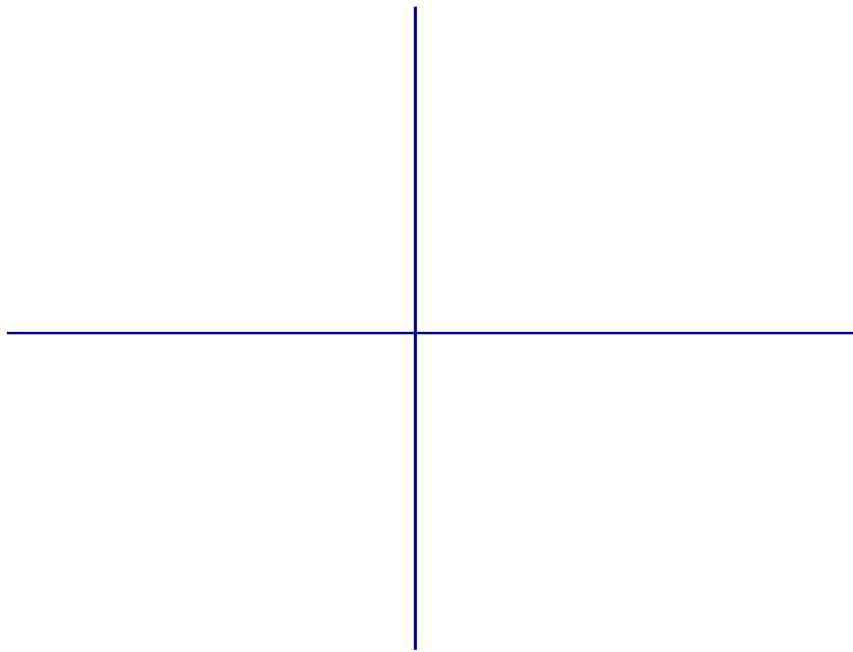
score: \_\_\_\_\_

Show all work. Round to 3 decimals.

You must do #12.

12. Find the traits and **sketch**  $f(x) = x^3 - x^2 - 16x + 16$  on  $x \in [-5, 6]$ .

Show the sign patterns for  $f(x)$ ,  $f'(x)$ , and  $f''(x)$ .



**You may skip either #13, #14, or #15.**

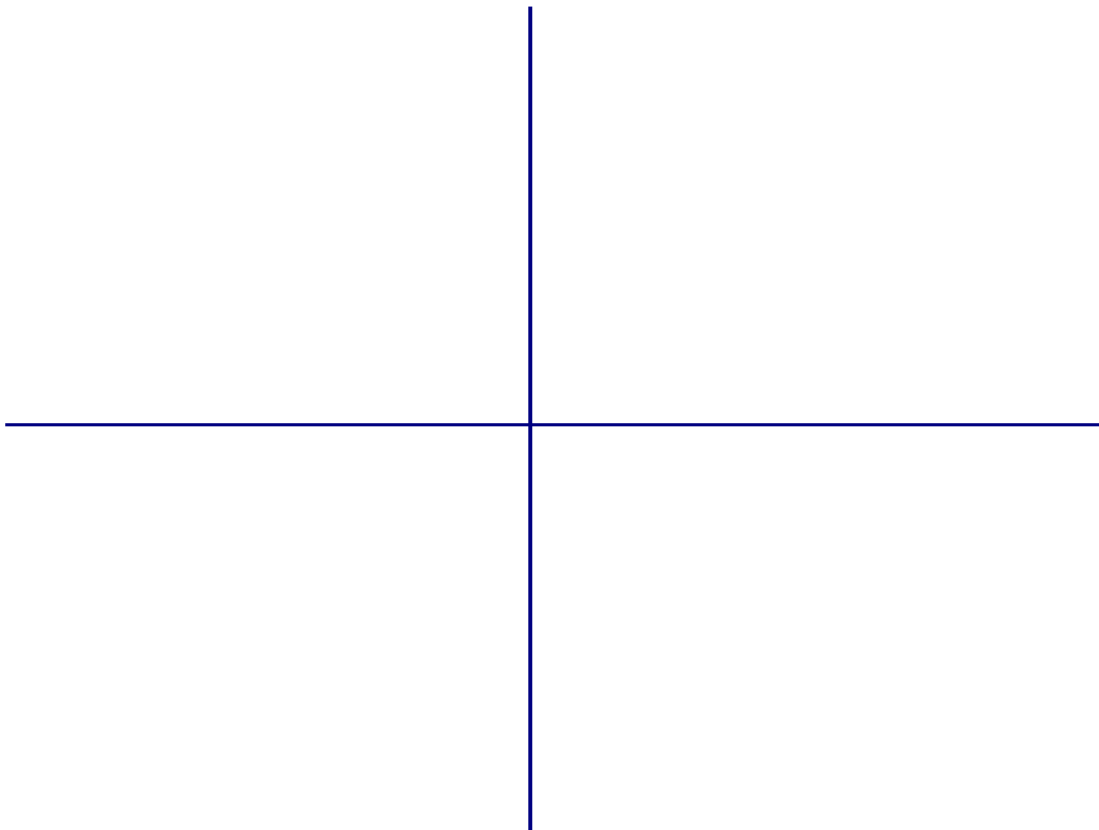
13. Find the traits and **sketch** of  $y = \sqrt{x^4 - 16x^2 + 36}$ .

Y-intercept:

Range:

End Behavior (Left):

End Behavior (Right):



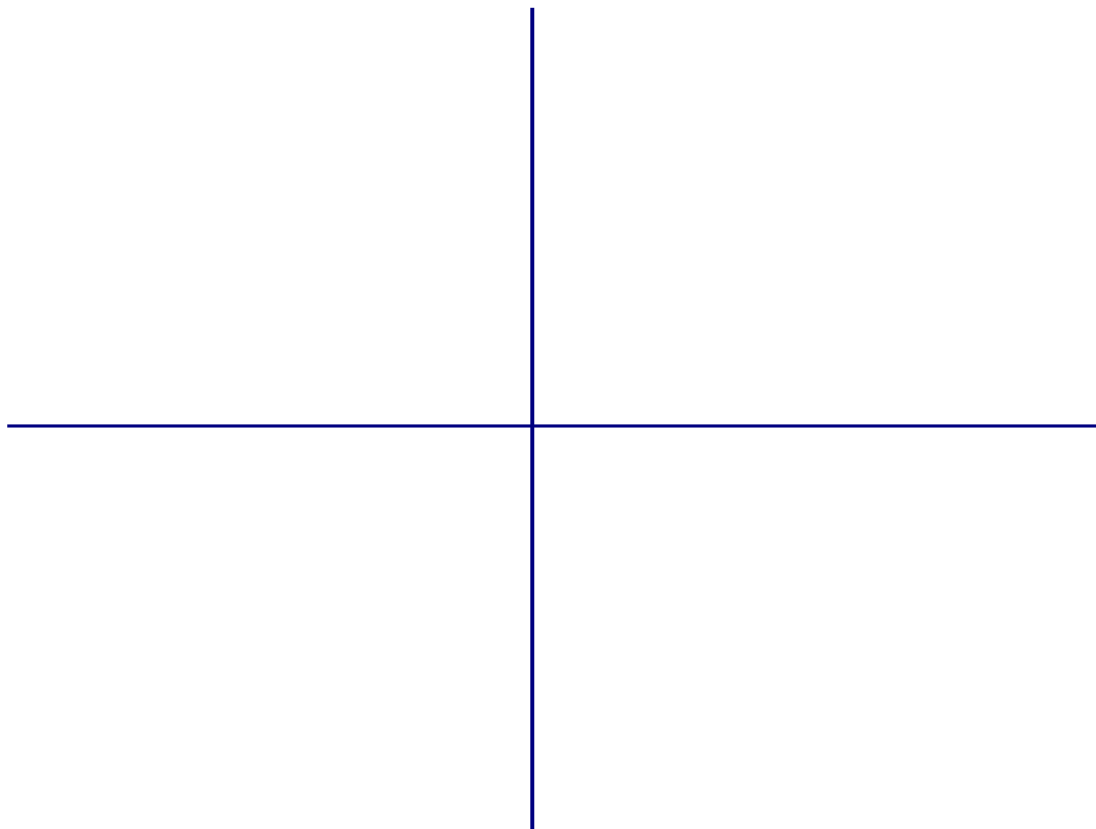
14. Find the traits and **Sketch**  $g(x) = \frac{2x^2 - 9x - 5}{x^2 - 25}$ .

Y-intercept:

Range:

End Behavior (Left):

End Behavior (Right):





15. Find the Traits and **Sketch** of  $y = (x^2 - 6x)e^{x+1}$ .

Y-intercept:

Range:

End Behavior (Left):

End Behavior (Right):

