Precalculus -- Final 2019 --Review #1 Date _____
Name _____ Period _____

1. Sketch the graph of $f(x)=\frac{x-1}{2x}$ labeling all asymptotes, zeros, intercepts (etc.)

2. Find ALL asymptotes of $f(x)=\frac{4x^2-2x+7}{x-1}$

3. Solve for x: $3^{x-1}=\frac{1}{81}$

4. Rewrite the following with a *positive* exponent and draw a sketch: $f(x)=\left(\frac{1}{4}\right)^{-x}$.

5. Write in logarithmic form: $e^{-2}=1.35$

6. Write as a single logarithm: $5\ln x-\frac{1}{2}\ln y+6\ln z$

7. Find the point of intersection:

a) $f(x)=e^{-2x}$ *and* $g(x)=e^{\ln 10}$ b) $g(x)=\ln(2x^2-5)$ and $h(x)=\ln(-9x)$

8. Use the graph of $f(x)=\log_e x$ to describe the transformations that yield the graph of $g(x)=-\log_e(x-2)+1$, then graph $g(x)$. Define domain, range, and asymptote.

9. Give the domain of $f(x)=\ln(3x^2-5x-2)$.

10. Solve: $x^5 - 5x^3 + 4x = 0$ by factoring.
(Note that this is the same question as "Find the zeros of $f(x) = x^5 - 5x^3 + 4x$")

11. By completing the square (put into $y=a(x-h)^2+k$), sketch the graph of $f(x) = 3x^2 - 12x + 4$ and identify the vertex.

12. Give the solution set for: a) $\frac{x+5}{x^2}\le 0$ b) $\frac{x}{x-2}\ge\frac{8}{x}$