And derivative

Goal ND Griven fixt, find F(x) = SO(F(x)) = F(x).

If F(x) = G'(x) on G(x) = G(x) = G(x) = G(x) = G(x) (by MUZ)

Problems. Find Antial For

1.) $(x^{2}+1)^{2}$ (: $x^{9}+2x^{2}+1 \sim \frac{1}{5}x^{5}+\frac{3}{3}x^{3}+x$) 2.) $8^{x}+x^{-9/5} \sim \frac{1}{8^{x}}(8^{x}+5x^{1/5})$

3.) $\frac{e^{4x}+4^{x}}{e^{2}} \sim \frac{1}{e^{2}}\left(\frac{1}{9}e^{4x}+\frac{1}{8n(9)}4^{x}\right)$

4.) P"(E1: 6°+1/62 ; F(2):3; F'(1)=2 Rivel F.

3-29/3 1 hol2) = (2



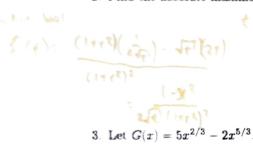
Math 1A Spring 2025 Quiz 7

Name:

- Tame:

 1. Use linear approximation to estimate $\cos 29^\circ$.

 (0) $(\frac{\pi}{2} \frac{\pi}{4}) \approx (-\sin(\pi \epsilon))(-\frac{\pi}{3}) + \cos(\pi \epsilon)$
- - = (-1/2)(-3/180) + 5 /2 = 53/2 + 7/360
- 2. Find the absolute maximum and absolute minimum values of $f(t) = \sqrt{t}/(1+t^2)$ on the interval [0, 2].



(P(+) 0 0 - min 1/13 93.4 - max.

- - (a) Find the intervals of increase or decrease.
 - (b) Find the local maximum or minimum values.
 - (c) Find the intervals of concavity and inflection points.

A.)
$$G'(x) = \frac{10}{3}x^{\frac{10}{3}} - \frac{10}{3}x^{\frac{2}{3}}$$

= $\left(\frac{10}{3}\right)\left(x^{\frac{2}{3}}\right)\left(\frac{1}{x}-1\right)$
Pos. on $e \in X < 1$

inimum values.

y and inflection points.

B.) level min
$$x=0$$

$$\log x = (-\frac{10}{3})(x^{-8/3})(1-x)$$

$$\log x = (-\frac{10}{3})(x^{-8/3})$$

Neg. 0. \times 0. \times 1 4. Use l'Hospital's Rule to solve the following limit: $\lim_{x\to\infty} x^{e^{-x}}$.

=
$$\exp(\lim_{x\to\infty} e^{-x} \ln |x|) = \exp(\lim_{x\to\infty} \frac{\ln |x|}{e^x}) + \frac{1}{1+0} \operatorname{pire}(1+0) = \exp(\lim_{x\to\infty} \frac{1}{x}) = \exp(\log x) = e$$