This print-out should have 5 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 10.0 points

Find $f'(x)$ when

$$f(x) = \frac{1}{\sqrt{4x - x^2}}\,.$$

1. $f'(x) = \dfrac{x-2}{(4x-x^2)^{3/2}}$

2. $f'(x) = \dfrac{x-2}{(4x-x^2)^{1/2}}$

3. $f'(x) = \dfrac{x-2}{(x^2-4x)^{3/2}}$

4. $f'(x) = \dfrac{2-x}{(x^2-4x)^{1/2}}$

5. $f'(x) = \dfrac{2-x}{(x^2-4x)^{3/2}}$

6. $f'(x) = \dfrac{2-x}{(4x-x^2)^{3/2}}$

002 10.0 points

Find all the critical points of f when

$$f(x) = \frac{x}{x^2+4}\,.$$

1. $x = -4,\, 4$

2. $x = -2,\, 0$

3. $x = -4,\, 2$

4. $x = -2,\, 4$

5. $x = -2,\, 2$

6. $x = 0,\, 2$

003 10.0 points

Determine the absolute maximum value of

$$f(x) = \sin(x) - \cos^2(x)$$

on $[0,\, 2\pi]$.

1. abs. max. value $= -\dfrac{3}{4}$

2. abs. max. value $= \dfrac{5}{4}$

3. abs. max. value $= 1$

4. abs. max. value $= \dfrac{3}{4}$

5. abs. max. value $= -1$

6. abs. max. value $= -\dfrac{5}{4}$

004 10.0 points

Find the absolute minimum value of

$$f(x) = \frac{1}{3}x^3 - 4x^2 + 7x + 9$$

on the interval $[0,\, 3]$.

1. none of the other answers

2. abs. min. value $= 1$

3. abs. min. value $= 2$

4. abs. min. value $= 4$

5. abs. min. value $= 3$

005 10.0 points

Determine the absolute maximum value of

$$f(x) = \frac{3+2x}{x^2+4}$$

on the interval $[-1,\, 2]$.

1. none of the other answers

2. abs max $= \dfrac{1}{5}$

3. abs max $= \dfrac{7}{8}$

4. abs max $= \dfrac{3}{2}$

5. abs max $= 1$