

1. (1 pt) The linear approximation at $x = 0$ to $\frac{1}{\sqrt{9-x}}$ is $A + Bx$ where A is: _____ and where B is: _____

Answer(s) submitted:

- 1/3
- 1/54

(correct)

Correct Answers:

- 0.333333333333333
- 0.0185185185185185

2. (1 pt) Use linear approximation, i.e. the tangent line, to approximate $\sqrt{25.3}$ as follows:

Let $f(x) = \sqrt{x}$. The equation of the tangent line to $f(x)$ at $x = 25$ can be written in the form $y = mx + b$ where m is: _____ and where b is: _____

Using this, we find our approximation for $\sqrt{25.3}$ is

NOTE: For this part, give your answer to at least 9 significant figures or use fractions to give the exact answer.

Answer(s) submitted:

- 1/10
- 5/2
- (5+(3/100))

(correct)

Correct Answers:

- 0.1
- 2.5
- 5.03

3. (1 pt) Use linear approximation, i.e. the tangent line, to approximate $\frac{1}{1.004}$ as follows: Let $f(x) = \frac{1}{x}$ and find the equation of the tangent line to $f(x)$ at a "nice" point near 1.004. Then use this to approximate $\frac{1}{1.004}$.

Answer(s) submitted:

- 0.996

(correct)

Correct Answers:

- 0.996

4. (1 pt) Let $y = 4\sqrt{x}$.

Find the change in y , Δy when $x = 4$ and $\Delta x = 0.1$ _____

Find the differential dy when $x = 4$ and $dx = 0.1$ _____

Answer(s) submitted:

- 0.0993827
- 0.1

(correct)

Correct Answers:

- 0.0993826925266337
- 0.1

5. (1 pt) Let $y = 2x^2 + 6x + 2$.

Find the differential dy when $x = 4$ and $dx = 0.3$ _____

Find the differential dy when $x = 4$ and $dx = 0.6$ _____

Answer(s) submitted:

- 6.6
- 13.2

(correct)

Correct Answers:

- 6.6
- 13.2

6. (1 pt) Let $y = \tan(3x + 7)$.

Find the differential dy when $x = 3$ and $dx = 0.3$ _____

Find the differential dy when $x = 3$ and $dx = 0.6$ _____

Answer(s) submitted:

- 0.981342
- 1.96268

(correct)

Correct Answers:

- 0.981341770449887
- 1.96268354089977