Calculus Practice: Use Derivatives to Analyze Functions 7a

For each problem, find the x-coordinates of all points of inflection.

1) $f(x) = -(-x + 2)^{\frac{1}{2}}$

A) Inflection point at: $x = 4$
B) Inflection point at: $x = 3$
C) No inflection points exist.
D) Inflection point at: $x = 2$

2) $y = \frac{16x}{x^2 + 16}$

A) Inflection points at: $x = -4\sqrt{3}, 0, 4\sqrt{3}$
B) No inflection points exist.
C) Inflection points at: $x = -16\sqrt{3}, 4, 16\sqrt{3}$
D) Inflection points at: $x = -\frac{4\sqrt{3}}{3}, \frac{1}{3}, \frac{4\sqrt{3}}{3}$

3) $y = -\frac{3x}{x - 3}$

A) Inflection point at: $x = 4$
B) Inflection point at: $x = 3$
C) No inflection points exist.
D) Inflection point at: $x = 2$

4) $y = \frac{1}{5}(x - 3)^{\frac{5}{3}} + 2(x - 3)^{\frac{2}{3}}$

A) Inflection point at: $x = 5$
B) Inflection point at: $x = 20$
C) Inflection point at: $x = \frac{5}{3}$
D) No inflection points exist.

5) $y = \frac{1}{5}(x - 4)^{\frac{5}{3}} + 2(x - 4)^{\frac{2}{3}}$

A) Inflection point at: $x = 24$
B) Inflection point at: $x = 6$
C) Inflection point at: $x = 2$
D) No inflection points exist.

6) $y = \frac{1}{5}(x - 4)^{\frac{5}{3}} + 2(x - 4)^{\frac{2}{3}} - 2$

A) Inflection point at: $x = 2$
B) Inflection point at: $x = 6$
C) No inflection points exist.
D) Inflection point at: $x = 24$

7) $f(x) = \frac{3}{x^2 - 16}$

A) Inflection point at: $x = 2$
B) Inflection point at: $x = 4$
C) No inflection points exist.
D) Inflection point at: $x = 3$

8) $y = -2\csc(x)$; $[-\pi, \pi]$

A) Inflection points at: $x = -\pi, 0, \pi$

B) Inflection points at: $x = -\frac{\pi}{2}, \frac{\pi}{2}$

C) No inflection points exist.

D) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

9) $y = -\tan(2x)$; $[-\pi, \pi]$

A) Inflection points at: $x = -\frac{\pi}{2}, \frac{\pi}{2}$

B) Inflection points at: $x = -\pi, 0, \pi$

C) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

D) Inflection points at: $x = -\pi, -\frac{\pi}{2}, 0, \frac{\pi}{2}, \pi$

10) $y = -2\cos(2x)$; $[-\pi, \pi]$

A) Inflection points at: $x = -\pi, 0, \pi$

B) Inflection points at: $x = -\frac{\pi}{2}, \frac{\pi}{2}$

C) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

D) No inflection points exist.

11) $y = 2\tan(x)$; $[-\pi, \pi]$

A) Inflection points at: $x = -\pi, -\frac{\pi}{2}, 0, \frac{\pi}{2}, \pi$

B) Inflection points at: $x = -\pi, 0, \pi$

C) Inflection points at: $x = -\frac{\pi}{2}, \frac{\pi}{2}$

D) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

12) $f(x) = -\sec(2x)$; $[-\pi, \pi]$

A) Inflection points at: $x = -\frac{\pi}{2}, \frac{\pi}{2}$

B) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

C) No inflection points exist.

D) Inflection points at: $x = -\pi, 0, \pi$

13) $y = -2\cot(2x)$; $[-\pi, \pi]$

A) No inflection points exist.

B) Inflection points at: $x = -\pi, -\frac{\pi}{2}, 0, \frac{\pi}{2}, \pi$

C) Inflection points at: $x = -\pi, 0, \pi$

D) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

14) $f(x) = 2\sin(x)$; $[-\pi, \pi]$

A) Inflection points at: $x = -\frac{\pi}{2}, \frac{\pi}{2}$

B) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

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D) No inflection points exist.

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D) Inflection points at: $x = -\pi, 0, \pi$

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B) Inflection points at: $x = -\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}$

C) No inflection points exist.

*D) Inflection points at: $x = -\pi, 0, \pi$