Derivatives Worksheet

Calculate the Derivatives at the Points Indicated:

1 $f(x) = 2x^2 - 6x + 5$ at x = -5.

$m_{tan} = -26$

2 $f(x) = x^3 + 2x - 5$ at x = 1.

$m_{tan} = 5$

3 $f(x) = \dfrac{1}{x}$ at x = 2.

$m_{tan} = -\dfrac{1}{4}$

4 $f(x) = \sqrt{x}$ at x = 3.

$m_{tan} = \dfrac{1}{2\sqrt{3}}$

5 $f(x) = \dfrac{x}{x-1}$ at x = 2.

$m_{tan} = -1$

6 Given the equation $f(x) = 2x^2 - 3x - 1$, find the coordinates of the point on the curve in which the tangent forms a 45° angle with the x-axis.

pt. $(1, -2)$

TIPS practice

ANS.

1. $f(x) = x^2 - 1$ find k so that r.o.c on $x \in [-3, k]$ is 10

$K = 13$

2. $f(x) = \dfrac{2}{3x - k}$ find k so that $m_{sec} = -9$ on $x \in [2, 4]$

$K \doteq 5.9$ or $k \doteq 12.1$

3. $f(x) = k\sqrt{x}$ find k so that r.o.c at x = 2 is -9

$K = -18\sqrt{2}$

(HINT) on Multiple choice (iroc)
don't do difference quotient
use squeezing