Calculus Practice: Using Differentiation to Find a Tangent 2b

For each problem, find the equation of the line tangent to the function at the given point. Your answer should be in slope-intercept form.

1) $y = \ln(x + 4)$ at $(-3, 0)$

2) $y = -e^{x-1}$ at $\left(0, -\frac{1}{e}\right)$

3) $y = -\ln(x + 1)$ at $(1, -\ln 2)$

4) $f(x) = -\ln(x + 3)$ at $(-2, 0)$

5) $y = -e^{x}$ at $(1, -e)$

6) $f(x) = \ln(x + 2)$ at $(-1, 0)$

7) $f(x) = -\ln(-x + 2)$ at $(0, -\ln 2)$

8) $f(x) = -\ln(x + 2)$ at $(-1, 0)$

9) $y = -e^{x-2}$ at $\left(1, -\frac{1}{e}\right)$

10) $f(x) = \ln(-x + 2)$ at $(0, \ln 2)$

11) $y = -\cos(2x)$ at $\left(-\frac{\pi}{4}, 0\right)$

12) $y = -\csc(2x)$ at $\left(-\frac{2\pi}{3}, -\frac{2\sqrt{3}}{3}\right)$

13) $f(x) = \tan(x)$ at $\left(-\frac{3\pi}{4}, 1\right)$

14) $f(x) = \cos(x)$ at $(\pi, -1)$

15) $f(x) = 2\sec(x)$ at $(\pi, -2)$

16) $f(x) = -\tan(x)$ at $(\pi, 0)$

17) $f(x) = -2\cos(x)$ at $(\pi, 2)$

18) $y = 2\cot(2x)$ at $\left(\frac{5\pi}{6}, -\frac{2\sqrt{3}}{3}\right)$

19) $y = -\cot(x)$ at $\left(-\frac{\pi}{4}, 1\right)$

20) $f(x) = \csc(2x)$ at $\left(-\frac{\pi}{4}, -1\right)$

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For each problem, find the equation of the line tangent to the function at the given point. Your answer should be in slope-intercept form.

1) $y = \ln(x+4)$ at $(-3, 0)$

$y = x + 3$

2) $y = -e^{x-1}$ at $\left(0, -\frac{1}{e}\right)$

$y = -\frac{1}{e} \cdot x - \frac{1}{e}$

3) $y = -\ln(x+1)$ at $(1, -\ln 2)$

$y = -\frac{1}{2}x + \frac{-2\ln 2 + 1}{2}$

4) $f(x) = -\ln(x+3)$ at $(-2, 0)$

$y = -x - 2$

5) $y = -e^{x}$ at $(1, -e)$

$y = -ex$

6) $f(x) = \ln(x+2)$ at $(-1, 0)$

$y = x + 1$

7) $f(x) = -\ln(-x+2)$ at $(0, -\ln 2)$

$y = \frac{1}{2}x - \ln 2$

8) $f(x) = -\ln(x+2)$ at $(-1, 0)$

$y = -x - 1$

9) $y = -e^{x-2}$ at $\left(1, -\frac{1}{e}\right)$

$y = -\frac{1}{e} \cdot x$

10) $f(x) = \ln(-x+2)$ at $(0, \ln 2)$

$y = -\frac{1}{2}x + \ln 2$

11) $y = -\cos(2x)$ at $\left(-\frac{\pi}{4}, 0\right)$

$y = -2x - \frac{\pi}{2}$

12) $y = -\csc(2x)$ at $\left(-\frac{2\pi}{3}, -\frac{2\sqrt{3}}{3}\right)$

$y = -\frac{4}{3}x + \frac{-6\sqrt{3} - 8\pi}{9}$

13) $f(x) = \tan(x)$ at $\left(-\frac{3\pi}{4}, 1\right)$

$y = 2x + \frac{2 + 3\pi}{2}$

14) $f(x) = \cos(x)$ at $(\pi, -1)$

$y = -1$

15) $f(x) = 2\sec(x)$ at $(\pi, -2)$

$y = -2$

16) $f(x) = -\tan(x)$ at $(\pi, 0)$

$y = -x + \pi$

17) $f(x) = -2\cos(x)$ at $(\pi, 2)$

$y = 2$

18) $y = 2\cot(2x)$ at $\left(\frac{5\pi}{6}, -\frac{2\sqrt{3}}{3}\right)$

$y = -\frac{16}{3}x + \frac{-6\sqrt{3} + 40\pi}{9}$

19) $y = -\cot(x)$ at $\left(-\frac{\pi}{4}, 1\right)$

$y = 2x + \frac{2 + \pi}{2}$

20) $f(x) = \csc(2x)$ at $\left(-\frac{\pi}{4}, -1\right)$

$y = -1$