

Your input: factor $-\frac{x^4}{10000} + \frac{3x^3}{500} + \frac{27x}{80} - \frac{81}{4}$.

Factor the common term:

$$\left(-\frac{x^4}{10000} + \frac{3x^3}{500} + \frac{27x}{80} - \frac{81}{4}\right) = \left(-\frac{x^4 - 60x^3 - 3375x + 202500}{10000}\right)$$

Group the expression: $x^4 - 60x^3 - 3375x + 202500 = (x^4 - 60x^3) + (202500 - 3375x)$

Factor: $(x^4 - 60x^3) + (202500 - 3375x) = x^3(x - 60) - 3375(x - 60)$

Factor once more: $x^3(x - 60) - 3375(x - 60) = (x - 60)(x^3 - 3375)$

$$-\frac{(x^4 - 60x^3 - 3375x + 202500)}{10000} = -\frac{(x - 60)(x^3 - 3375)}{10000}$$

Apply the [difference of cubes](#) formula $\alpha^3 - \beta^3 = (\alpha - \beta)(\alpha^2 + \alpha\beta + \beta^2)$ with $\alpha = x$ and $\beta = 15$:

$$-\frac{(x - 60)(x^3 - 3375)}{10000} = -\frac{(x - 60)(x - 15)(x^2 + 15x + 225)}{10000}$$

Thus, $-\frac{x^4}{10000} + \frac{3x^3}{500} + \frac{27x}{80} - \frac{81}{4} = -\frac{(x - 60)(x - 15)(x^2 + 15x + 225)}{10000}$.

Answer: $-\frac{x^4}{10000} + \frac{3x^3}{500} + \frac{27x}{80} - \frac{81}{4} = -\frac{(x - 60)(x - 15)(x^2 + 15x + 225)}{10000}$.