

## LIMITS

Either find the indicated limit, or show that the limit fails to exist by evaluating it along two different paths and arriving at two different results.

1.  $\lim_{(x,y) \rightarrow (0,0)} \cos(xy)$

2.  $\lim_{(x,y) \rightarrow (0,0)} e^{xy}$

3.  $\lim_{(x,y) \rightarrow (0,0)} \frac{3x^2 - 2y^2}{x^2 + y^2}$

4.  $\lim_{(x,y) \rightarrow (1,-1)} \frac{x^2 - 2xy + y^2}{x - y}$

5.  $\lim_{(x,y) \rightarrow (0,0)} \frac{x^2 - 2xy + y^2}{x - y}$

6.  $\lim_{(x,y) \rightarrow (1,1)} \frac{x^2 - y^2}{x - y}$

7.  $\lim_{(x,y) \rightarrow (0,0)} \frac{x}{y}$

8.  $\lim_{(x,y) \rightarrow (0,0)} \frac{x^4 y^2}{x^8 + y^4}$