

### Extra Examples of Limits-Math 111

Evaluate the following limits. Justify your answers. Be clear if the limit equals  $+\infty$ ,  $-\infty$  or DNE.

They look very similar, so pay attention to which techniques works for each limit.

$$1. \lim_{x \rightarrow 2} \frac{x + 7}{x^2 - 3x + 2} =$$

$$2. \lim_{x \rightarrow 1} \frac{x + 7}{x^2 - 3x + 2} =$$

$$3. \lim_{x \rightarrow 0} \frac{x + 7}{x^2 - 3x + 2} =$$

$$4. \lim_{x \rightarrow -7} \frac{x + 7}{x^2 + x + 1} =$$

$$5. \lim_{x \rightarrow -7} \frac{x + 7}{x^2 + 2x - 35} =$$

$$6. \lim_{x \rightarrow 7} \frac{x + 7}{x - 7} =$$

$$7. \lim_{x \rightarrow 2} \frac{\sqrt{x + 7} - 3}{x^2 - 3x + 2} =$$

$$8. \lim_{x \rightarrow 7} \frac{x + 7}{|x - 7|} =$$

$$9. \lim_{x \rightarrow -6} \frac{x + 7}{|x - 7|} =$$

$$10. \lim_{x \rightarrow -7} \frac{\frac{1}{1-x} - \frac{1}{8}}{x + 7} =$$

$$11. \lim_{x \rightarrow 10} \frac{x + 7}{|x - 7|} =$$

$$12. \lim_{x \rightarrow 7} \frac{x^2 - 16x + 63}{x^2 - 14x + 49} =$$

$$13. \lim_{x \rightarrow 7} \frac{3 - x}{7 - x} =$$

$$14. \lim_{x \rightarrow 7} \frac{3 - x}{(x - 7)^2} =$$

$$15. \lim_{x \rightarrow 7} \frac{x^2 - 16x + 63}{x^2 - 49} =$$

$$16. \lim_{x \rightarrow 7} \frac{7 - x}{\sqrt{x + 42} - 7} =$$

$$17. \lim_{x \rightarrow 7} \frac{x - 7}{|x - 7|} =$$