A.P. Calculus AB **Limits Review**

Refer to the graph of $g(x)$ below in order to answer the following questions. If a limit doesn't exist, explain why.

1. $\lim_{x\to\infty} g(x) =$

2. $\lim_{x\to-\infty} g(x) =$

3. $\lim_{x\to a^+} g(x) =$

4. $\lim_{x\to a^-} g(x) =$

5. $\lim_{x\to a} g(x) =$

6. $\lim_{x\to 0} g(x) =$

7. $\lim_{x\to b^+} g(x) =$

8. $\lim_{x\to b^-} g(x) =$

9. $\lim_{x\to b} g(x) =$

10. $\lim_{x\to c} g(x) =$

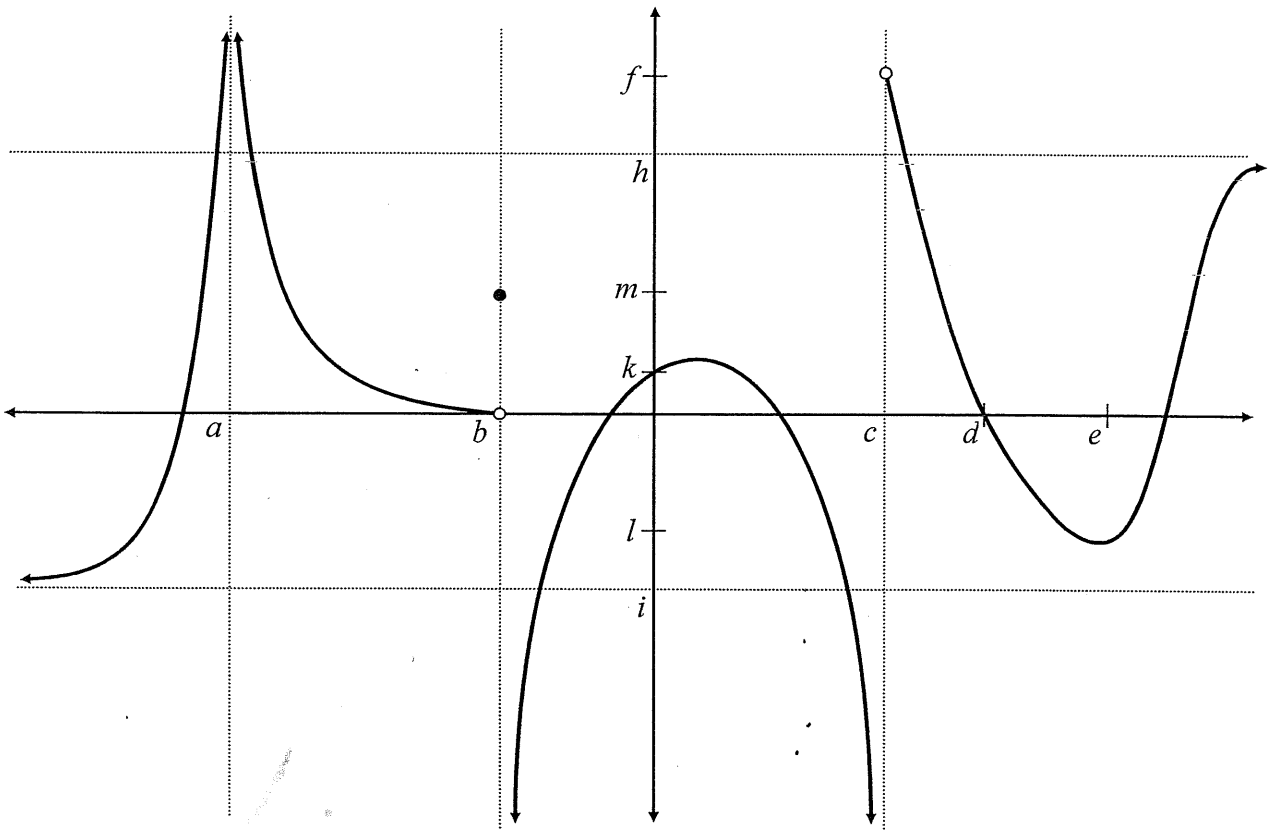
11. $\lim_{x\to d} g(x) =$

12. $\lim_{x\to e} g(x) =$

13. $g(e) =$

14. $g(0) =$

15. $g(b) =$



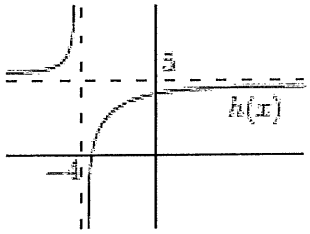
REFER TO THE GRAPH OF $h(x)$ TO EVALUATE THE FOLLOWING LIMITS.

142. $\lim_{x\to -4^+} h(x)$

143. $\lim_{x\to -4^-} h(x)$

144. $\lim_{x\to \infty} h(x)$

145. $\lim_{x\to -\infty} h(x)$



REFER TO THE GRAPH OF $g(x)$ TO EVALUATE THE FOLLOWING LIMITS.

146. $\lim_{x\to a^+} g(x)$

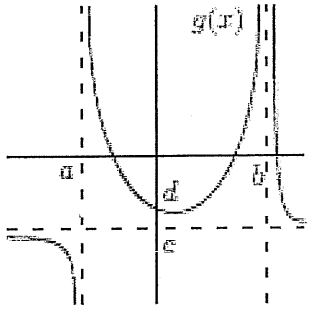
147. $\lim_{x\to a^-} g(x)$

148. $\lim_{x\to 0} g(x)$

149. $\lim_{x\to \infty} g(x)$

150. $\lim_{x\to b^+} g(x)$

151. $\lim_{x\to b^-} g(x)$



REFER TO THE GRAPH OF $f(x)$ TO DETERMINE WHICH STATEMENTS ARE TRUE AND WHICH ARE FALSE. IF A STATEMENT IS FALSE, EXPLAIN WHY.

152. $\lim_{x\to -1^+} f(x) = 1$

153. $\lim_{x\to 0^-} f(x) = 0$

154. $\lim_{x\to 0^-} f(x) = 1$

155. $\lim_{x\to 0^-} f(x) = \lim_{x\to 0^+} f(x)$

156. $\lim_{x\to 0} f(x)$ exists

157. $\lim_{x\to 0} f(x) = 0$

158. $\lim_{x\to 0} f(x) = 1$

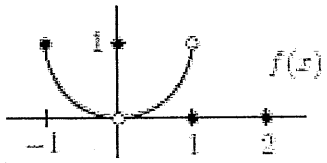
159. $\lim_{x\to 1} f(x) = 1$

160. $\lim_{x\to 1} f(x) = 0$

161. $\lim_{x\to 2^-} f(x) = 2$

162. $\lim_{x\to -1^-} f(x)$ does not exist

163. $\lim_{x\to 2^+} f(x) = 0$



Find the values of the following limits if they exist.

16. $\lim_{x\to 9} \dfrac{3-\sqrt{x}}{9-x}$

17. $\lim_{x\to -2} \dfrac{x^2+5x+6}{x^2-4}$

18. $\lim_{x\to 4} \sqrt[3]{\dfrac{x^2-3x+4}{2x^2-x-1}}$

19. $\lim_{x\to 2} \dfrac{4x+3}{3x-6}$

20. $\lim_{x\to 0} \dfrac{x}{\sqrt{x+3}-\sqrt{3}}$

21. $\lim_{x\to -4} \dfrac{2x+8}{x-4}$

A.P. Calculus AB **Limits Review**

key

Refer to the graph of $g(x)$ below in order to answer the following questions. If a limit doesn't exist, explain why.

1. $\lim_{x\to\infty} g(x) =$ h

2. $\lim_{x\to-\infty} g(x) =$ i

3. $\lim_{x\to a^+} g(x) =$ $+\infty$

4. $\lim_{x\to a^-} g(x) =$ $+\infty$

5. $\lim_{x\to a} g(x) =$ $+\infty$

6. $\lim_{x\to 0} g(x) =$ k

7. $\lim_{x\to b^+} g(x) =$ $-\infty$

8. $\lim_{x\to b^-} g(x) =$ 0

9. $\lim_{x\to b} g(x) =$ DNE, nonremovable discontinuity $\lim_{x\to b^-} g(x) \neq \lim_{x\to b^+} g(x)$

10. $\lim_{x\to c} g(x) =$ DNE (nonremovable discontinuity) $\lim_{x\to c^-} g(x) \neq \lim_{x\to c^+} g(x)$

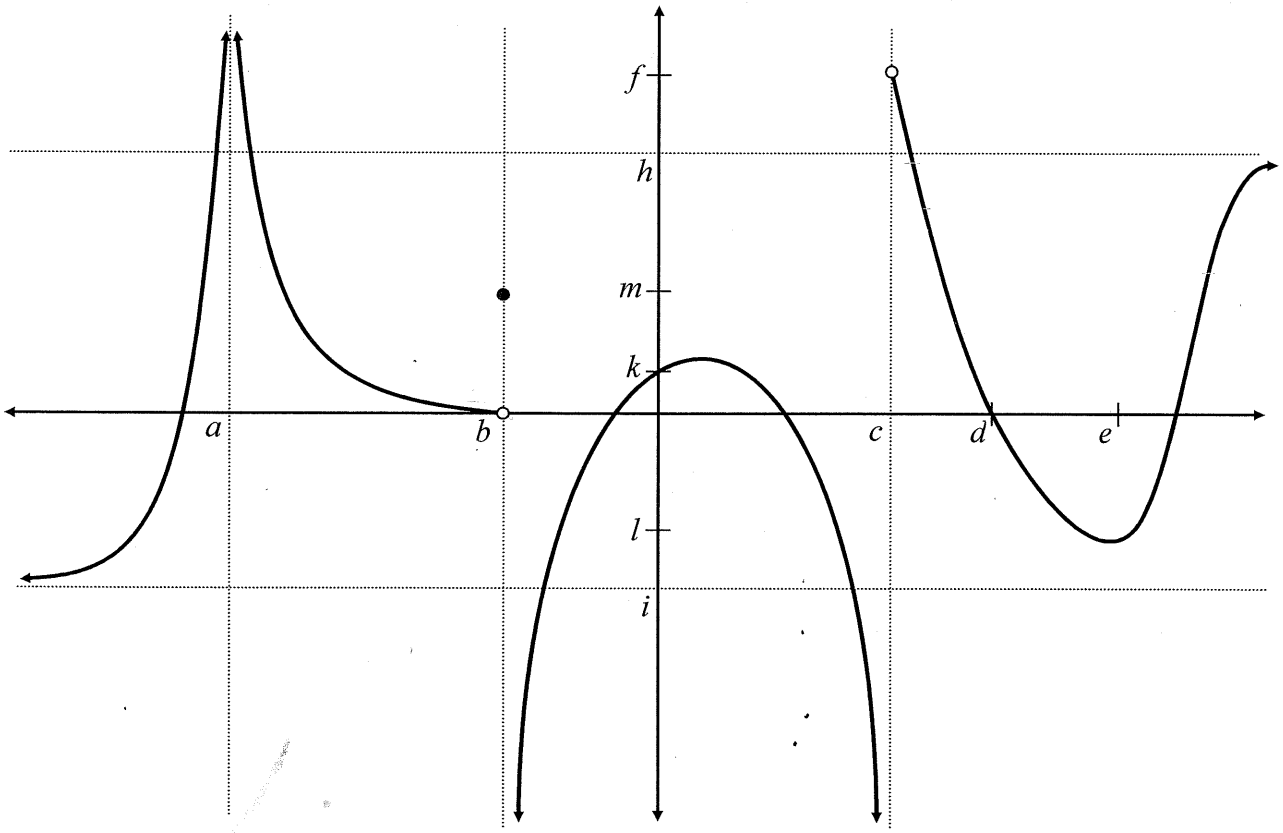
11. $\lim_{x\to d} g(x) =$ 0

12. $\lim_{x\to e} g(x) =$ l

13. $g(e) =$ l

14. $g(0) =$ k

15. $g(b) =$ m



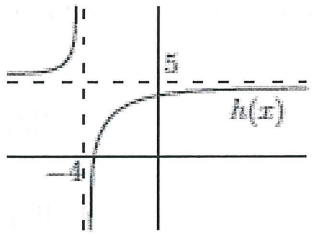
Refer to the graph of $h(x)$ to evaluate the following limits.

142. $\lim_{x \to -4^+} h(x) = -\infty$

143. $\lim_{x \to -4^-} h(x) = +\infty$

144. $\lim_{x \to \infty} h(x) = 5$

145. $\lim_{x \to -\infty} h(x) = 5$



Refer to the graph of $g(x)$ to evaluate the following limits.

146. $\lim_{x \to a^+} g(x) = +\infty$

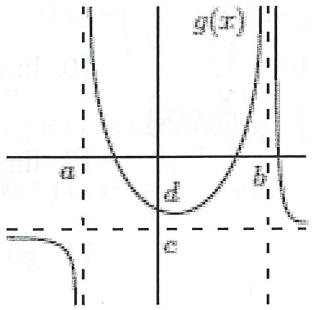
147. $\lim_{x \to a^-} g(x) = -\infty$

148. $\lim_{x \to 0} g(x) = d$

149. $\lim_{x \to \infty} g(x) = c$

150. $\lim_{x \to b^+} g(x) = +\infty$

151. $\lim_{x \to b^-} g(x)$



Refer to the graph of $f(x)$ to determine which statements are true and which are false. If a statement is false, explain why.

152. $\lim_{x \to -1^+} f(x) = 1$ True

153. $\lim_{x \to 0^-} f(x) = 0$ True

154. $\lim_{x \to 0^-} f(x) = 1$ False, 0

155. $\lim_{x \to 0^-} f(x) = \lim_{x \to 0^+} f(x) = 0$ True

156. $\lim_{x \to 0} f(x)$ exists $= 0$ True

157. $\lim_{x \to 0} f(x) = 0$ True

158. $\lim_{x \to 0} f(x) = 1$ False, $= 0$

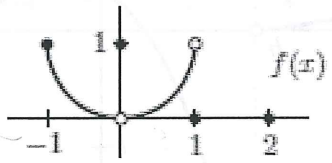
159. $\lim_{x \to 1} f(x) = 1$ False, $\lim_{x \to 1^-} f(x) \neq \lim_{x \to 1^+} f(x)$

160. $\lim_{x \to 1} f(x) = 0$ False, DNE

161. $\lim_{x \to 2^-} f(x) = 2$ False, DNE

162. $\lim_{x \to -1^-} f(x)$ does not exist True

163. $\lim_{x \to 2^+} f(x) = 0$ False, DNE



Find the values of the following limits if they exist.

16. $\lim_{x \to 9} \frac{3 - \sqrt{x}}{9 - x}$ $\frac{0}{0}$ $\frac{3+\sqrt{x}}{3+\sqrt{x}}$

$\lim_{x \to 9} \frac{9 - x}{9(3+\sqrt{x})} = \boxed{\frac{1}{6}}$

17. $\lim_{x \to -2} \frac{x^2 + 5x + 6}{x^2 - 4}$ $\frac{0}{0}$

$\lim_{x \to -2} \frac{(x+2)(x+3)}{(x+2)(x-2)} = \boxed{\frac{1}{-4}}$

18. $\lim_{x \to 4} \sqrt[3]{\frac{x^2 - 3x + 4}{2x^2 - x - 1}}$ $\sqrt[3]{\frac{8}{27}} = \boxed{\frac{2}{3}}$

19. $\lim_{x \to 2} \frac{4x + 3}{3x - 6}$ $\frac{11}{0}$ $\boxed{\text{DNE}}$

20. $\lim_{x \to 0} \frac{x}{\sqrt{x+3} - \sqrt{3}}$ $\frac{\sqrt{x+3}+\sqrt{3}}{\sqrt{x+3}+\sqrt{3}}$ $\frac{0}{0}$ $\boxed{\sqrt{6}}$

21. $\lim_{x \to -4} \frac{2x + 8}{x - 4}$ $= \frac{0}{-8} = \boxed{0}$