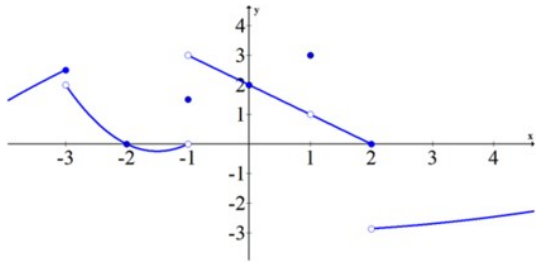
Module 11: Limits Answers

(1) Evaluate the following:



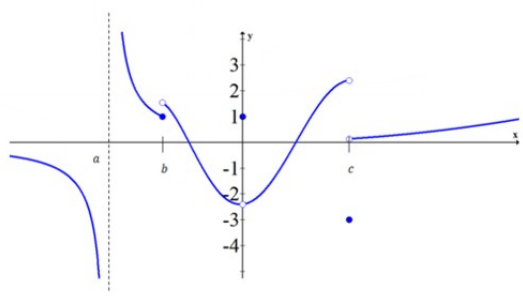
(a) $\lim_{x\to -3^-} f(x)$ **(b)** $\lim_{x\to -3^+} f(x)$ **(c)** $\lim_{x\to -3} f(x)$ **(d)** $\lim_{x\to -2^-} f(x)$ **(e)** $\lim_{x\to -2^+} f(x)$ **(f)** $\lim_{x\to -2} f(x)$

(g) $\lim_{x\to -1^-} f(x)$ **(h)** $\lim_{x\to -1^+} f(x)$ **(i)** $\lim_{x\to -1} f(x)$ **(j)** $\lim_{x\to 0^-} f(x)$ **(k)** $\lim_{x\to 0^+} f(x)$ **(l)** $\lim_{x\to 0} f(x)$

(m) $\lim_{x\to 1^-} f(x)$ **(n)** $\lim_{x\to 1^+} f(x)$ **(o)** $\lim_{x\to 1} f(x)$ **(p)** $\lim_{x\to 2^-} f(x)$ **(q)** $\lim_{x\to 2^+} f(x)$ **(r)** $\lim_{x\to 2} f(x)$

Answers: (a) $\approx$ 2.5, (b) = 2, (c) = DNE, (d) = 0, (e) = 0, (f) = 0, (g) = 0, (h) = 3, (i) = DNE, (j) = 2, (k) = 2, (l) = 2, (m) = 1, (n) = 1, (o) = 1, (p) = 0, (q) = -3, (r) = DNE

(2) Evaluate the following (answers can be approximate):



(a) $\lim_{x\to a^-} f(x)$ **(b)** $\lim_{x\to a^+} f(x)$ **(c)** $\lim_{x\to a} f(x)$ **(d)** $\lim_{x\to b^-} f(x)$ **(e)** $\lim_{x\to b^+} f(x)$ **(f)** $\lim_{x\to b} f(x)$

(g) $\lim_{x\to 0^-} f(x)$ **(h)** $\lim_{x\to 0^+} f(x)$ **(i)** $\lim_{x\to 0} f(x)$ **(j)** $\lim_{x\to c^-} f(x)$ **(k)** $\lim_{x\to c^+} f(x)$ **(l)** $\lim_{x\to c} f(x)$

Answers: (a) = $-\infty$, (b) = ∞, (c) = DNE, (d) = 1, (e) $\approx$ 1.5, (f) = DNE, (g) $\approx$ -2.5, (h) $\approx$ -2.5, (i) $\approx$ -2.5, (j) $\approx$ 2.5, (k) = 0, (l) = DNE

(3) Evaluate the following (*hint*: try factoring first):

(a) $\lim_{x\to -\frac{2}{5}} \dfrac{6x^2-11x-7}{15x^2-29x-14}$ **(b)** $\lim_{x\to -\frac{1}{2}} \dfrac{6x^2-11x-7}{15x^2-29x-14}$ **(c)** $\lim_{x\to -\frac{7}{3}} \dfrac{6x^2-11x-7}{15x^2-29x-14}$

(d) $\lim_{x\to -1} \dfrac{x^3-x^2-7x+3}{x^2+2x-1}$ **(e)** $\lim_{x\to 1} \dfrac{x^3-x^2-7x+3}{x^2+2x-1}$ **(f)** $\lim_{x\to 3} \dfrac{x^3-x^2-7x+3}{x^2+2x-1}$

Answers: (a) = DNE, (b) = 0, (c) = $\frac{11}{29}$, (d) = -4, (e) = -2, (f) = 0