

Problem 1

Let $f(x, y) = \sqrt{4 - x^2 - y^2}$.

a) Find the function's domain and range.

b) Describe the function's level curves.

c) Find the boundary of the function's domain.

d) Determine if the domain is open, closed or neither.

e) Determine if the domain is bounded or unbounded.

Problem 2

Let $f(x, y) = \frac{1}{\sqrt{1 - x^2 - y^2}}$.

a) Find the function's domain and range.

b) Describe the function's level curves.

c) Find the boundary of the function's domain.

d) Determine if the domain is open, closed or neither.

e) Determine if the domain is bounded or unbounded.

Problem 3

Let $f(x, y) = \frac{1}{\ln(x^2 + y^2)}$.

a) Find the function's domain and range.

b) Describe the function's level curves.

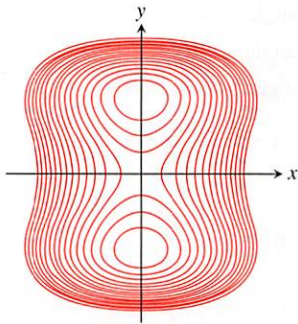
c) Find the boundary of the function's domain.

d) Determine if the domain is open, closed or neither.

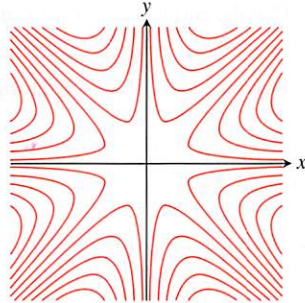
e) Determine if the domain is bounded or unbounded.

Exercises 13–18 show level curves for the functions graphed in (a)–(f). Match each set of curves with the appropriate function.

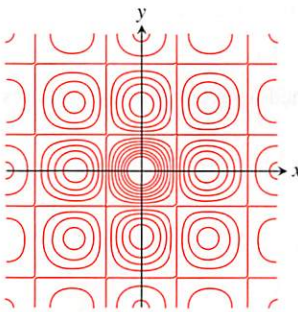
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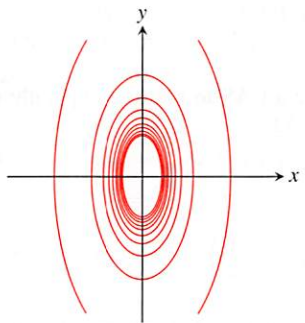
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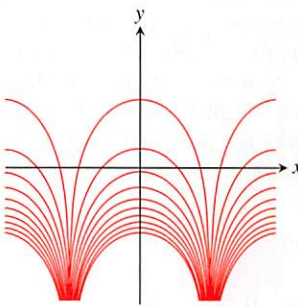
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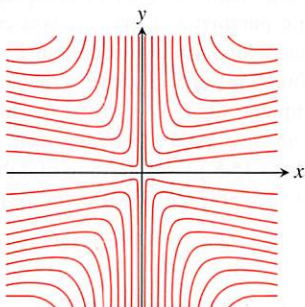
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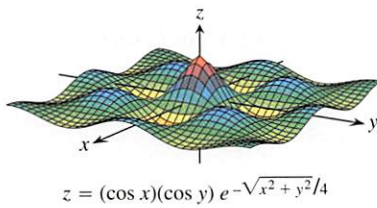
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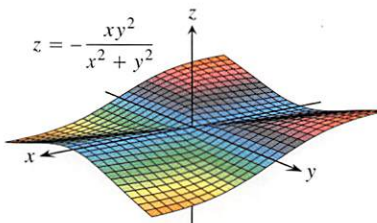
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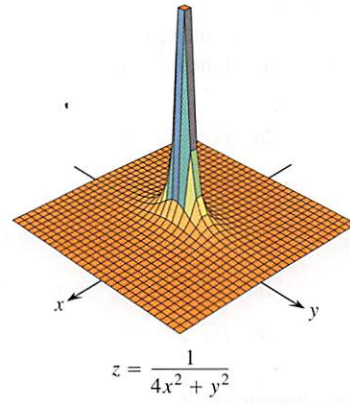
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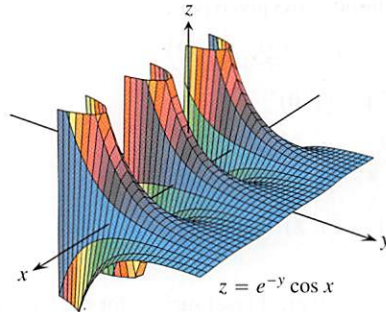
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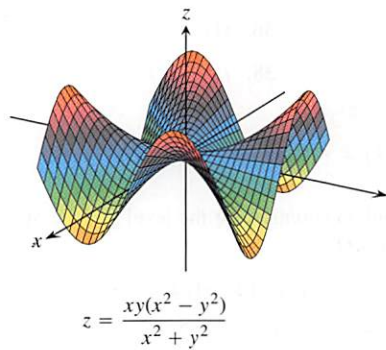
c.



d.



e.



f.

