Math HW7

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7.6 (sketch its level sets as well), 7.7, 7.10

7.1a

Answer: $f(a,b,c,d,e,f) = a \times b \times c \times d \times e \times f$

7.3a

Answer: 5

Work:

Plug in 3 and 1:

```
(3^2 - 3 * 1 + (6 * 1)^2) / (3 - 3 * 1)
```

```
[1] Inf
```

So that doesn't work. Need to find some way to cancel out the denominator.

$$x^2 - xy + 6y^2,$$

Set y equal to 1:

$$= x^2 - (x \cdot 1) + (6 \cdot 1)^2,$$
$$= x^2 - x + 6,$$
$$= (x-3)(x+2).$$

Plug y back in:

$$= (x - 3y)(x + 2y).$$

Check work:

```
from __future__ import division
from sympy import *
x, y = symbols('x y')
print(expand((x - 3*y) * (x + 2*y)))
```

```
x**2 - x*y - 6*y**2
```

plug back into original expression:

$$\frac{(x-3y)(x+2y)}{x-3y},$$
$$= x + 2y.$$

Plugging in x and y values:

```
3 + 2 * 1
```

```
[1] 5
```