In [74]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

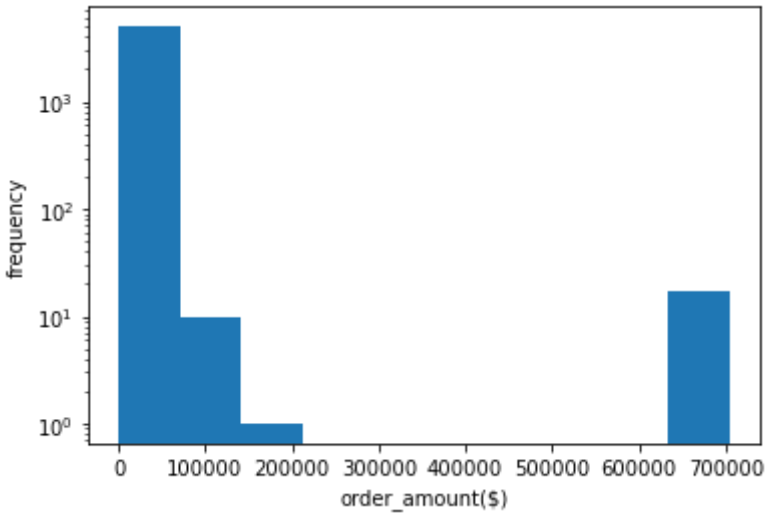
In [10]:
```
df = pd.read_csv('2019 Winter Data Science Intern Challenge Data Set - Sheet1.cs
```

In [16]:
```
# EDA
df.head(10)
```

Out[16]:

	order_id	shop_id	user_id	order_amount	total_items	payment_method	created_at
0	1	53	746	224	2	cash	2017-03-13 12:36:56
1	2	92	925	90	1	cash	2017-03-03 17:38:52
2	3	44	861	144	1	cash	2017-03-14 4:23:56
3	4	18	935	156	1	credit_card	2017-03-26 12:43:37
4	5	18	883	156	1	credit_card	2017-03-01 4:35:11
5	6	58	882	138	1	credit_card	2017-03-14 15:25:01
6	7	87	915	149	1	cash	2017-03-01 21:37:57
7	8	22	761	292	2	cash	2017-03-08 2:05:38
8	9	64	914	266	2	debit	2017-03-17 20:56:50
9	10	52	788	146	1	credit_card	2017-03-30 21:08:26

In [84]:
```
# EDA
new = df['order_amount'].value_counts(ascending=True).reset_index()
# print(list(new['index'])) #list of ascending most popular purchase values
# print(df[df['order_amount'] == 704000].head())
revenue = sum(df['order_amount'])
num_orders = df.shape[0]
lst = list(new['index'])
plt.hist(df['order_amount'], log=True);
plt.xlabel('order_amount($)');
plt.ylabel('frequency');
# we can see how AOV is skewed based on this histogram and why we should conside
# another metric
```



In [72]:

```
# a
# AOV - revenue / # of orders

print("our AOV: "+str(revenue / num_orders))
# there's outliers in the (order_amount) field that's causing the AOV to be
# a huge overestimate
# i don't think AOV's a good unit of evalution because there's some very
# expensive purchases but only for 1 item
# also I think AOV isn't as usefull unless your store has a more compact
# price range. With the given data, we can see our order total prices are
# everywhere and as a result our AOV is being skewed.
# research other metrics
# RPV is not useful because every person listed has a purchase
# use median instead since it takes outliers into account

# b
median = np.median(df['order_amount'])
# the median we calculated should be a better indicator of the price of one purc

# c
print("our median: " + str(median))
```

```
our AOV: 3145.128
our median: 284.0
```

Question 2

a

select count(*) as count from Shippers s join Orders o on s.ShipperID = o.ShipperID where s.ShipperName = "Speedy Express";

b

```
select e.LastName from Employees e where e.EmployeeID = (select o.EmployeeID from Orders o
group by o.EmployeeID order by count(OrderID) desc limit 1);
```

C

```
select p.productName from products p where p.productID = (select productID from (select *
from customers c join orders o on c.CustomerID == o.CustomerID where Country == "Germany")
g join orderDetails d on d.OrderID = g.OrderID group by productID order by SUM(d.QUANTITY)
desc limit 1)
```